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THE LACK OF HOUSING FOR WORKERS ENGAGED IN THE MANUFACTURE OF WAR SUPPLIES.

BUILDING and real estate interests are awakening to the opportunities arising from the need of increased housing for the great army of workers, who are engaged in the manufacture of war munitions and supplies in the principal cities.

Plans for the erection of dwellings of this kind are already being prepared in some parts of the country, and before long an active house-building campaign in these centers will be under way.

It is generally conceded that there is a dearth of these dwellings, and this fact is becoming more and more apparent. The construction of these houses is imperative, if the industrial war resources of the nation are to be developed to the maximum degree. It is clear now that the erection of these homes is one of the very essential industries.

Modern plumbing and heating systems will be required in the building of homes for the workers. It has been recognized by the government and also by concerns engaged in the manufacture of war supplies, that the sanitary arrangements of workmen's homes cannot be consistently overlooked, or the community health will be open to inroads of infection and contagion. Any suggestion, for the sake of economy, which would recommend the outhouse as a substitute for the indoor toilet, in industrial communities, should be opposed most emphatically, because such a substitute would, in the final analysis, be unsanitary and therefore costly. It is clearly essential that modern plumbing and heating facilities be installed, so that both health and comfort can be maintained, as these things are unquestionably prime requisites of industrial efficiency.

Regarding the coming months, a big Minnesota contractor said recently: "There is a tendency, which is rather common, to be unduly conservative and to anticipate little building activity for some time to come. While it is never wise to assume an optimism, which is not well founded, it is equally unwise from the standpoint of psychology to emphasize too much of the depressing feature. It is to be remembered that the agricultural districts have profited by high prices for their crops, so much so, that concerns specializing in country sales are anticipating the biggest year in 1918, that they have had in several years. This excess wealth of the country sections should afford opportunities for considerable small building activity. Then there is the need of increased housing facilities for the thousands of munition workers in different parts of the country. Considering these two facts and supplementing a third fact that the government is reported to have scheduled over $1,000,000,000 in war building construction during 1918, which is within $200,000,000 of the total domestic building operations in 1917, we are not as hard pressed as we think."

Pessimism is not a constructive habit of mind. The building industry will, therefore, have to become accustomed to doing business on the war basis, which of course is not an ideal condition. The abrupt changes incident to war readjustment will doubtless become commonplace before long.

Concerning the current high prices of materials and labor, there is said to be little likelihood of any appreciably lower rate for some time to come, and the public will gradually get used to paying the present prices and will show less timidity in making investments.

Transportation congestion has, of course, been a contributing factor in the falling off of domestic operation, but now, since the federalization of the railroads, it is probable that the situation will in part be relieved.

Viewing the building outlook from this angle, there are sufficient grounds for some optimism as to the situation as a whole.

CHIMNEY REQUIREMENTS

The Elements of a Chimney Flue—The Breathing Apparatus of the Heating System

By Alfred G. King

CHIMNEYS, that are defective in construction and insufficient in area or height, are the direct cause of the failure of many heating installations to produce satisfactory results. By this statement we mean that a large share of the trouble with heating apparatus, experienced by every heating contractor, is directly traceable to the chimney flue.

The chimney is the throat of the breathing apparatus of the heating system and unless the flue is sized according to the needs or requirements of the building, and of the boiler, good combustion is impossible, and without good

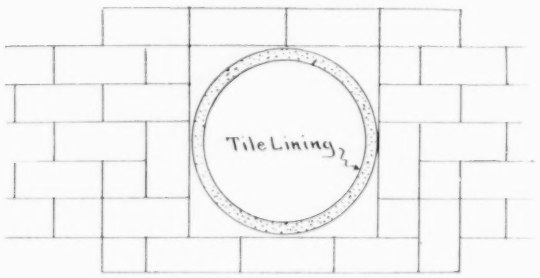


Fig. 1.

combustion of the fuel no boiler or heating apparatus can satisfactorily and economically perform the work, for which it has been installed.

The very first matter to be considered, in connection with the installation of a heating system, should be the chimney and a careful inspection of the flue, to which the boiler is to be attached, to determine whether it is adequate for the work or not.

There are three principal factors to be considered, viz: Area, height and shape. If a building is in process of construction, it is probable that a chimney suited to the requirements of the heating apparatus can be built. If, however, the heating system is to be installed in an old building or a new one already completed, the heating contractor should not fail to carefully examine every available chimney and determine whether the area, height and position of the same will probably prove sufficient to perform the service required.

What are the requirements of a good chimney? To burn the fuel properly the chimney must be sufficient in area and height to induce the required draft—that is, to pull sufficient air through the boiler to mix with the coal and gases and produce combustion, and also to carry off and discharge to the atmosphere the smoke and other products of combustion. The ascending movement of the smoke and gases in the chimney flue, against the pressure of the atmosphere, is spiral. As the air in the flue is heated and expanded causing an upward pressure sufficient to overcome that of the atmosphere, the smoke and gases ascend with a spiral motion. This movement increases in velocity according to the amount of air, commonly spoken of as "draft," which is admitted to the boiler. Therefore, the more air (or oxygen) admitted under the grate of the boiler, the more active will be the combustion of the fuel, provided the chimney flue has ample area and is of such height (to produce the required velocity) as to pass the air without choking.

It is possible to calculate the amount of air or oxygen required for the combustion of a given amount of coal; and with the size of grate, fire box area of the boiler, rate of combustion and such data known in order to compute the probable fuel requirements, the area and height of the chimney flue may be determined.

For example, practically 300 cu. ft. of air must pass through the grate to supply the oxygen required to effectively consume one pound of coal. For estimating purposes let us assume that the boiler has 4 sq. ft. of grate surface or a grate approximately 27 inches in diameter, and that we desire to figure the rate of combustion at 4 lb. per sq. ft. of grate per hour: therefore 4x4=16 pounds per hour and 16x300=4,800 cu. ft. of air required per hour to properly burn this amount of fuel. That is to say, 4,800 cu. ft. of air must pass through the chimney flue hourly to supply the oxygen required for the complete consumption of 16 pounds of coal. Theoretically about 11 lb. of air is required per pound of anthracite coal but actually—on account of interference of clinker and ash,—from 20 to 24 lb. will be required per pound of coal. The weight of 300 lb. of dry air at a temperature of 60 degrees is almost 23 lb. With this data in hand the area and velocity can easily be determined.

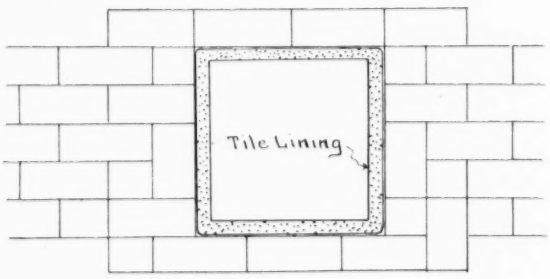


Fig. 2.

The temperature of the gases in the flue is a factor which should also be considered, if the boiler is to be operated economically, and this may be figured at 350 degrees at the base of the flue. For effective and economical results the gases should be consumed within the boiler, and not be burned or carried off unburned in the smoke pipe and chimney.

As the draft in the flue or the movement of the ascending smoke and gases is spiral, it follows that the best shape for a chimney flue is round. Without question a smooth round flue is better than any other type and a tile lined flue, with carefully cemented joints, is preferred to any other style of chimney construction. Fig. 1 shows a plan of a round tile lined flue. The air spaces in the corners between the outside of the tile and the brick

Table.
Size of Chimney.

Direct Radiation		Size of Flue	
Steam Sq. Ft.	Hot Water Sq. Ft.	Round Tile Inches	Square or Rectangular Inches
250 to 400	400 to 750	8	8 x 8
450 to 750	800 to 1,200	10	8 x 12
800 to 1,350	1,250 to 2,000	12	12 x 12
1,400 to 2,000	2,100 to 3,500	14	12 x 16
2,000 to 3,000	3,500 to 5,000	16	16 x 16
3,000 to 5,000	5,000 to 8,500	18	16 x 20

Note.—Rectangular flue sizes are for brick chimneys. If tile lined they may be slightly smaller to conform with commercial sizes of rectangular tile.

All indirect radiation should be estimated plus 50 per cent for steam and 75 per cent for hot water.

may be filled in with mortar and broken brick if desired. This however is not necessary.

The next best shape of flue in point of efficiency is a tile lined square flue or one as nearly square, as the construction of the building will permit. Fig. 2 shows a plan of chimney of this character. A rectangular shaped flue may be used, but in this event the depth of it should not be less than the diameter of the smoke pipe entering it. As rectangular tile flue lining is sized by outside measurement, it is not always possible to provide a depth of the lined flue equal to the diameter of the smoke pipe. The difference in depth is so slight that it does not matter. For example a standard 8½x13-

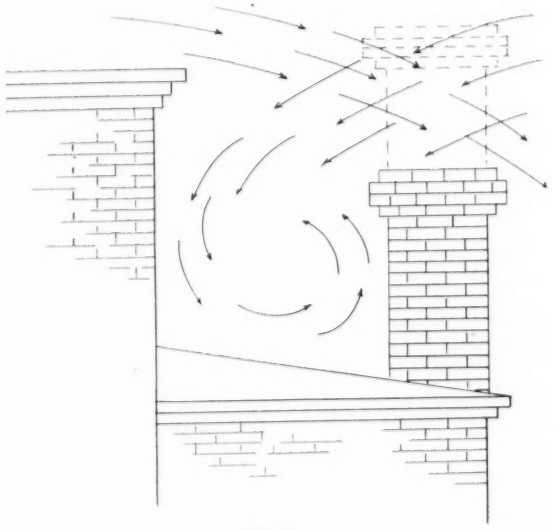


Fig. 3.

inch flue lining measures only 6⅞ inches x 11⅝ inches on the inside.

The next factor to be considered is that of height. Adequate height to obtain the required velocity or sharpness of draft is somewhat more important than the shape of the flue. The chimney of the average residence is from 30 to 45 feet high, and this height is usually sufficient to supply the need of a residence heating apparatus.

Some authorities claim that no flue should be less than 50 or 55 feet high and others state that the draft in a chimney less than 40 feet high is apt to be erratic. We believe that conditions such as a nearby roof higher than the flue, or some other obstruction, which interferes with the draft, has a greater bearing upon the effective work of the chimney than does the height of it.

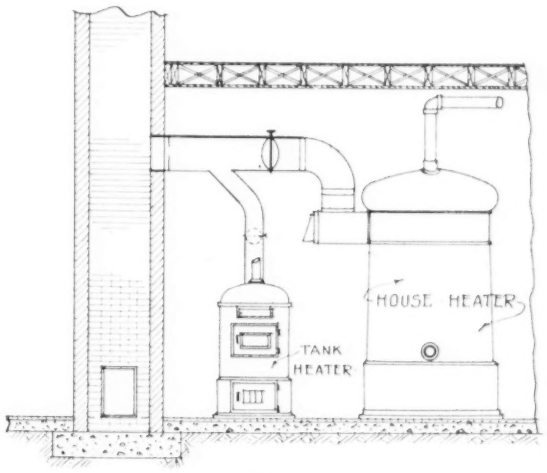


Fig. 4.

To avoid interference of this character it is important that the chimney be built to such height as to extend well above the highest part of the roof of the building or higher than any other adjacent roof or other obstruction, which might deflect the wind and cut off the draft or cause a down draft in the flue. An example of this fea-

Table.
Equalization of Sizes. Chimney Flues of Various Construction.

Round Tile		Rectangular or Square Tile		Brick Flues		Outside Iron Stack	
Diameter In.	Area Sq. In.	Size* In.	Area Sq. In.	Size** In.	Area Sq. In.	Size*** In.	Area Sq. In.
9	64	8½x 8½	53	8x 8	64	10	78
10	78	8½x13	80	8x12	96	12	113
12	113	13 x13	126	12x12	144	14	154
15	177	13 x18	159	12x16	192	17	227
18	254	18 x18	240	16x16	256	20	314
20	314	.....	.....	16x20	320	22	380
21	346	.....	.....	20x20	400	23	415
22	380	.....	.....	22x22	484	24	452
24	452	.....	.....	24x24	576	26	531

*Actual inside area given. Not regularly made larger than 18x18-in.

**Actual inside brick measurement slightly larger than given in table.

***An iron stack in the open air should be larger than a protected tile for equal service owing to greater condensation and friction.

ture is illustrated by Fig. 3, the action of the wind when blowing from either direction is shown by the arrows. The dotted extension of the chimney shows the height, to which it should have been constructed in order to guard against this condition.

The factors of height and area are of equal importance. Height alone is not sufficient as velocity attained by height is no proof of a good draft. As we have already stated, the area must be ample enough to carry the smoke gases without choking. The table, "Equalization of Sizes," given herewith, shows the comparative effective area of chimneys of various construction.

The flue should run straight up from the base to the top of the chimney and should have no other inlet opening than that for the smoke pipe of the boiler attached to it. Occasionally it is found necessary to connect a small tank heater, or small hot water boiler for heating domestic water, to the flue serving the heating apparatus. When no other flue may be had for this purpose, and this condition must prevail, there are two successful methods, either of which may be used, of connecting the smoke pipe of the tank heater.

Fig. 4 shows the smoke pipe of the small boiler connected directly into the smoke pipe of the larger heater. The small pipe should enter the larger pipe at an angle

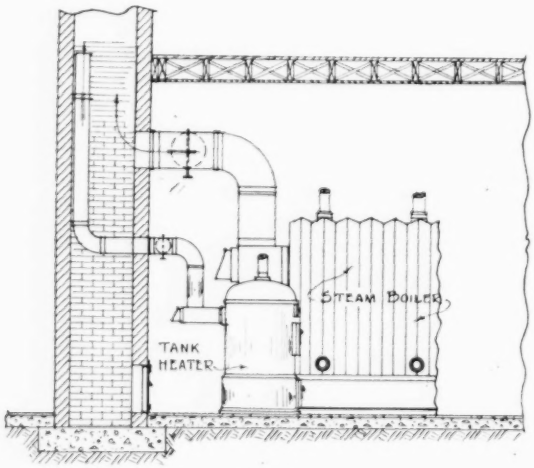


Fig. 5

and at the bottom as illustrated and each smoke pipe should be provided with a tight damper for use when either heater is not in operation. A somewhat better plan is shown by Fig. 5. By temporarily disconnecting the larger pipe it is usually possible to pass short lengths of the smaller pipe through the hole and attach them as shown. The top of the small pipe should extend on the inside of the flue above the inlet provided for the larger pipe. This method will prevent the smoke pipe of either boiler from interfering with the draft. Tight fitting dampers should be placed in each pipe as with the method shown by Fig. 4.

Not all boilers of equal size or capacity are alike in their draft requirements. Some boilers are so constructed as to require a greater "pull" of the draft than others, and it is to be regretted that all manufacturers of low-pressure or heating boilers do not publish data as to the chimney requirements (area, height, etc.) and fuel requirements under varying conditions of the boilers they manufacture.

A catalogue of the Thompson Heater Corporation of Buffalo, N. Y., has lately come into our hands and we must commend this company for the excellence and completeness of the data given. The available fuel, hourly consumption, power (B.t.u.) developed under varying conditions, height and area of the chimney required, and other data relating to the operation and work performed by each size of boiler made by them, is clearly and concisely given. This data is of great value to the heating contractor, who is endeavoring to select a boiler for any certain work.

From the suggestions given, we may realize that the selection and sizing of the chimney flue is fully as important as the selection of the boiler and other parts of the heating system, and it is to be regretted that the heating contractor, in a majority of cases, must accept of a chimney already constructed regardless of its area and height and regardless of what is actually required to perform satisfactory service. Not only must he accept of these conditions, but he is expected to guarantee results and to risk his reputation as a heating contractor upon the possible satisfactory performance of the heating system.

This condition is entirely wrong and architects, as well as builders, should give careful attention to the chimney requirements of every building they design or construct, keeping in mind the fact that a strong draft can easily be checked, and a flue of generous area can be reduced in size. As has been repeatedly stated "A good draft is a continual source of satisfaction; a poor draft is the bane of a fireman's existence."

WAR HITS GERMAN GAS METERS.

The effect of the commandeering of metals in Germany on the construction of gas meters is described in the Journal fur Gasbeleuchtung. Owing to the scarcity of petroleum there was a run on gas meters, with which the manufacturers were unable to cope for want of the usual raw materials and skilled labor. Substitute metals had to be sought, but this was not easy, as there were no experiments to go upon and no time to make them. The polished brass unions which account for the largest proportion of brass used in a gas meter were replaced by cast-zinc unions, but this did not prove satisfactory, and in spite of the danger of rust, malleable cast iron was then substituted. The nozzles and draining plugs of the wet meters were also made of cast zinc or iron.

For the dial mechanism, iron could not be used as a substitute for brass, as it rusts and is difficult to work, but for this work, as well as for the worms and wormwheels of the dry meters, brassed zinc gave good results.

It was more difficult to find a substitute for the red copper and bronze parts of the wet meters, as these parts are continually in contact with water as well as with gas. The drum axle and capstan were made of open-hearth ingot iron and brassed, while for the frames a bronze containing a large proportion of zinc was used, and brassed to make it possible to solder these parts in the usual way without using hydrochloric acid.

The substitution of brass and copper was thus satisfactorily solved, but it was found very difficult to discover a good quality of solder. Here the lack of experienced men was acutely felt, as it requires great skill to make gas-tight soldered seams. The small leakages in the interior of the gas meters caused by the flaws in soldering made it necessary to submit the meters to very severe tests and continually to control the quality of the solder. For the case and drums, lead-coated sheet iron was used in place of tin plate or galvanized sheeting, but no serviceable substitute for the leather diaphragm has been found.

A Golf Handicap.

"I wouldna say McTavish canna learn the game" remarked Sandy, as they trudged home from the links; "but it will be deefficult for him."

"Aye," agreed Donald. "At times he will be like to bust, what wi' being so releegious and tongue-tied."—*Everybody's Magazine.*

PNEUMATIC WATER SUPPLY SYSTEM

Notes on the Advantageous Features of Pneumatic Water Supply Systems and Their Proper Installation

By Harold L. Alt

FURNISHING water at proper pressure to the plumbing fixtures of a building is a most important matter and one upon which their satisfactory or unsatisfactory operation largely depends. While gravity tanks have been, and still are, used to a considerable extent, certain inherent objections are always encountered so that pneumatic systems are increasing daily both in number and capacity. Such being the case, it is essential that the elementary features of such installations should be understood by all concerned so that cases where such systems are peculiarly suitable will be quickly recognized and proper advantage taken thereof.

As is well known the gravity tank system depends solely upon the elevation of the tank to furnish the desired water pressure at the fixtures, but this means that the tank must be set higher than the highest portion of the building which it is to serve; this, as a general thing, only gives a moderate pressure on the story immediately beneath, and bubbling drinking fountains, together with water closet and urinal flush valves set on the story immediately below the location of a gravity tank are almost sure to give trouble due to the lack of sufficient water pressure.

In case of fire on the same or nearly the same level as a gravity tank the water supply is useless without the additional services of a fire pump either located in the building or from a fire engine in the street. Moreover gravity tanks must be installed either as an eyesore on the top of a building or concealed in more or less expensive penthouses which are usually warmed to keep the tanks from freezing.

Pnuematic tank systems, on the other hand, have none of these failings. The pneumatic system can throw a stream of water over the top of the building—if properly designed—can have its tank placed in the basement, or other out-of-the-way place, or even buried if desired, and

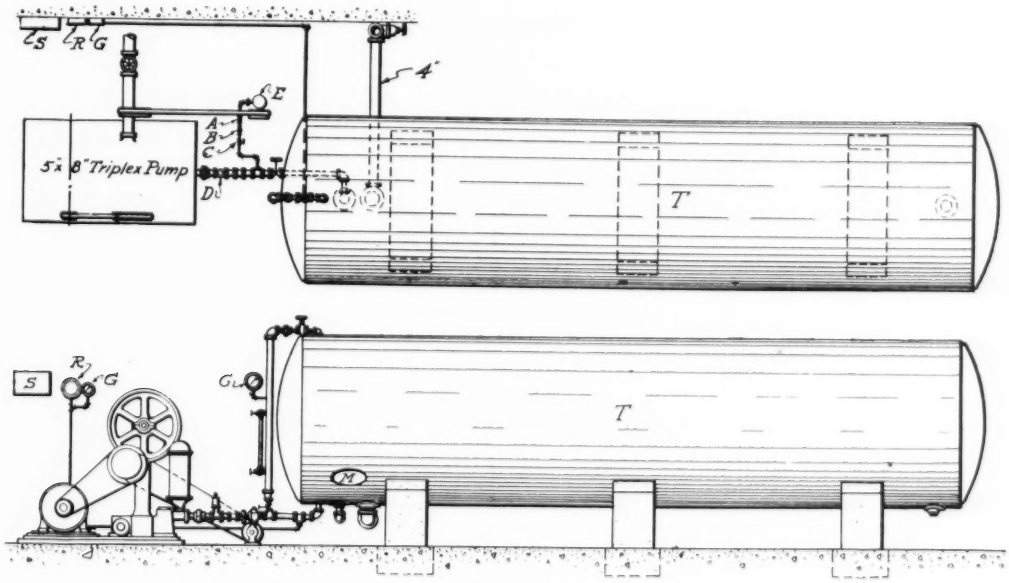


Fig. 1.

when so located, has little liability of troubles from freezing.

As its name implies, a "pneumatic" system of water supply is one, where the pressure of the water is generated and maintained by a cushion of air stored in the pneumatic tank. The water pumped into the tank against the pressure of the air cushion is promptly driven out again by the elastic air pressure, whenever a faucet or valve in the building is opened so as to allow the water to flow.

The most important thing in the arrangement of a pneu-

matic system is, first, proper installation of the apparatus and, second, equipment of sufficient capacity.

As far as the arrangement of the apparatus is concerned, this is usually cared for to some extent by the manufacturer who commonly furnishes blue prints showing how the various parts are piped up. Fig. 1 may be taken as a typical sample, this being the standard arrangement sent out by one of the pneumatic system manufacturers. In this drawing the pneumatic tank, T, is filled with water delivered from the 5 by 8-inch triplex pump through the discharge line, D, there being a relief valve in this line as shown. A water column, gauge glass and pressure gauge, G, are mounted on the front of the tank. A little air compressor, E, driven by a belt from the pump shaft furnishes the required amount of air necessary to keep the cushion in the tank renewed. This air enters the pump discharge line, D, through the ¾-inch check valve, B, and the ¾-inch globe valve, G, with a relief valve at A. The pump motor is controlled by the automatic starter, S, next to which is the regulator R, and gauge, A. Access to the interior of the tank is obtained through the manhole, M.

To avoid having the pressure in the tank fall so low that the water is not usable for the purposes required at a time when a large amount of water is still in the tank the air in the tank is compressed either before or after the pumping of water into the tank is begun. As it is generally assumed this compressed air is forced into the tank before the water, it has been termed "initial air pressure" or air pressure in the tank at the time of starting to fill it with water.

Some pumps are arranged to pump in a small amount of air with the water while other installations use a separate air compressor, as shown in Fig. 1. The air, under the high pressure in the tank, is gradually absorbed by the water and is carried off in the shape of minute bubbles when the water leaves the tank, thus requiring renewal from time to time. Hence the necessity of supplying air to maintain the cushion.

If an empty tank has all outlets closed except one and then has water pumped into it through this one opening the air will be compressed above the water thereby creating a still higher pressure.

Supposing water is to be pumped into the tank until a pressure of say 50 or 60 pounds per square inch is generated. This is probably enough for any ordinary installation, but the drawing off of this water rapidly reduces the pressure until there is not sufficient pressure to drive the water to the highest outlets on the system. Thus in a three-story building, at 10 feet of vertical height per story, the vertical head is 10 feet×3×.43=12.90 pounds; if 10 pounds is maintained at the highest outlet to properly operate same, then the total minimum back pressure must be 12.90+10.=22.90 or, say, 25 pounds, allowing for pipe friction. Then whenever the pressure in the tank drops below 25 pounds gauge, the tank is useless as far as the top outlets are concerned. But, on the other hand, the basement outlets should not be subjected to a pressure of over 100 pounds to avoid leaking faucets, noisy piping and splashing water.

Therefore, in such an installation the pressure could run from a minimum 25-pound gauge at the tank to a maximum of 100 pounds or a variation between the two pressures of 100—25, or 75 pounds. On a higher building the minimum would have to be increased in order to reach the higher elevation and the amount of variation would therefore be lessened.

Another case may also be considered where flush valves or other equipment should have a fairly constant water pressure to operate properly without readjustment. Some flush valves work best when such variation in pressure does not exceed 10 pounds. In this case the valves on the different levels are set at the average pressure maintained at that level, but the maximum variation in any part of the system—and therefore at the tank—does not exceed the limit selected.

Before the size or other features of a pneumatic system can be determined the table shown in Fig. 2 must be used. This table shows in the two left-hand columns the absolute pressure and the corresponding gauge pressure for the initial air (assuming atmospheric pressure at 15 pounds per square inch for the sake of even figures). Across the top of the table is read the tank pressure (gauge) while the figures given at the intersection of each horizontal line with each vertical column show the percentage of water in the tank under these conditions.

The space limitations in this article do not permit the subject of "quantity of water required" to be discussed, and it is assumed that the hourly consumption has been fairly approximated by ordinary methods. If a plant is assumed as requiring a maximum hourly supply of, say, 1,000 gallons and that the highest pressure allowable at the tank for the fixtures on the same level is decided upon as 70 pounds and the vertical head 40 feet, the drop in pressure due to pipe friction is not over 10 pounds, while the least pressure allowed at the highest outlet is taken as 20 pounds, then Fig. 2 is applied as shown in the following:

Under the above conditions the highest tank pressure will be 70 pounds (as limited by the lowest fixtures) and the lowest pressure will be

40×.43=17.20 pounds for vertical head.
10. pounds for pipe friction (estimated).
20. pounds maintained at highest outlet.

47.20 pounds total, say 50 pounds.

Then the pneumatic tank in its filled condition (or, in other words, when the pump has been automatically stopped by the pressure control) will have a gauge pressure of 70 pounds, and it may empty out until the gauge pressure falls to 50 pounds, giving a 20-pound variation in the water pressure. As a general thing the most economical results are obtained when the water is practically all expelled from the tank when the low-pressure *limit* is reached. Suppose, for safety, a retention of 5 per cent of the water is assumed; for the case under consideration this 5 per cent to be added later. If all the water (except the 5 per cent) is expelled from the tank at the time the low-pressure point is reached, there must be an air pressure within the tank (at this time) of 50 pounds. Therefore the "initial air pressure" in this case—or the air pressure before starting to pump in water—must also be 50 pounds.

Knowing the initial air pressure and the maximum tank gauge pressure after pumping in the water (70 pounds) a reference to Fig. 2 opposite "50 pounds gauge —65 pounds absolute initial air pressure" and in the column "70 pounds gauge pressure in tank" is found the factor 24, which is the percentage of water contained in the tank when in the filled condition. Therefore to carry a 1 hour's supply of water, the capacity of the tank must be 1,000 gallons/24 per cent=4,166, say 4,170 gallons; with the 5 per cent additional 4,170+5 per cent of 4,170=4,378 gallons. This may all be put into one large tank or it may be split into two 2,200-gallon or three 1,500-gallon tanks. It makes absolutely no difference with the quantity, pressure or delivery.

If the pump is assumed to run 25 per cent of the time,

its capacity must be 100 per cent/25 per cent=4 times the hourly maiximum use of $\frac{1{,}000\times4}{60}$=66⅔ gallons per minute. Probably a pump rated at 100 gallons per minute would be used.

But if the pressure on the lowest fixtures were allowed to go up to 100 pounds (an entirely feasible proportion) then the capacity of the tank could be reduced as follows:

Maximum pressure .....100 pounds
Minimum pressure ..... 50 pounds
Initial air pressure (gauge)..... 50 pounds

For 44 per cent of water the water line would be 44 per cent=.45 D or (with a 60-inch tank) .45×60=27 inches and with the additional 5 per cent

44 per cent+5 per cent of 44 per cent=46.2 per cent.

46.2 per cent=.47 D and .47×60=28.2 inches.

The height of the water line in each case is taken from the inside of the bottom of the shell, assuming the tank to be placed in a horizontal position.

From Fig. 2 it is easy to determine at any time if a tank contains the right proportion of air, even when it is operating. Suppose a 60-inch diameter tank should have 50 pounds initial air pressure, 100 pounds maximum gauge pressure and 50 pounds minimum gauge pressure.

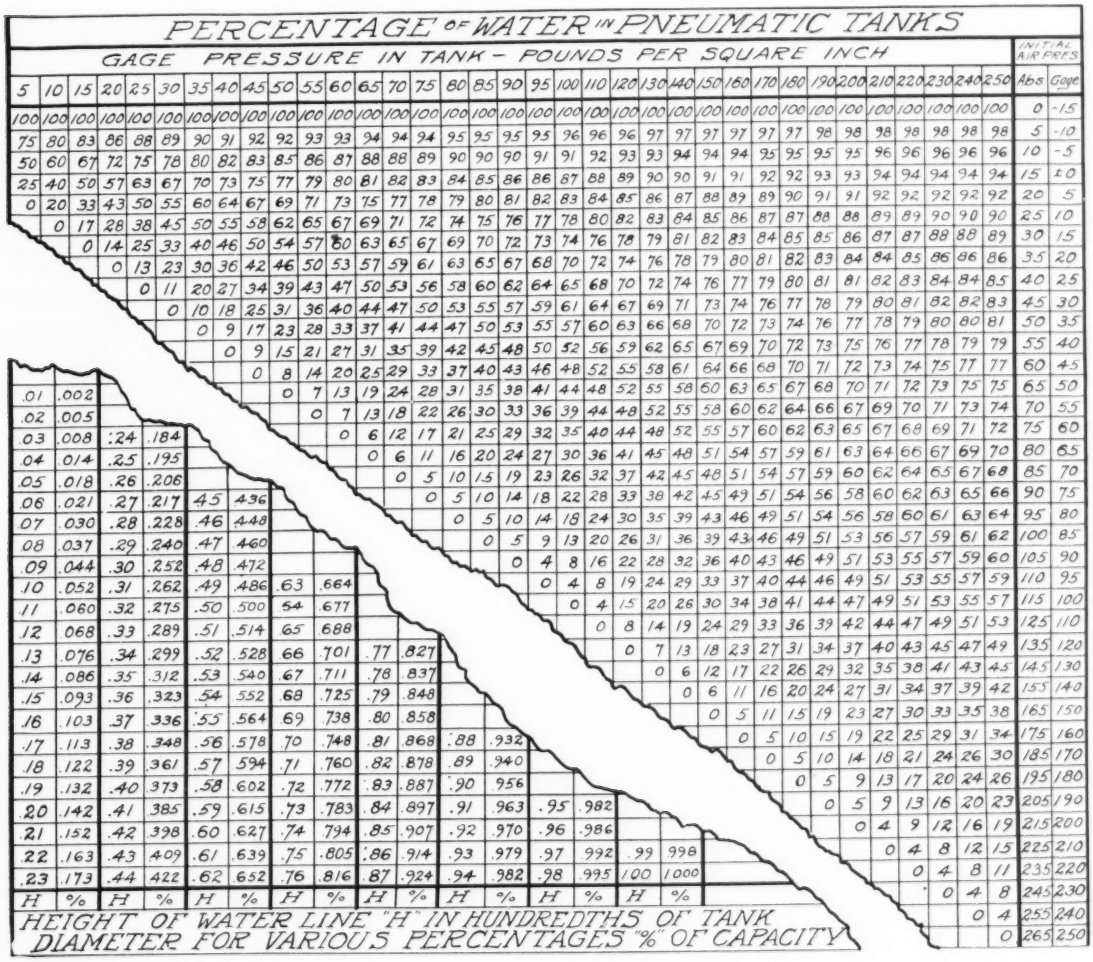

PERCENTAGE OF WATER IN PNEUMATIC TANKS
GAGE PRESSURE IN TANK - POUNDS PER SQUARE INCH
INITIAL AIR PRES
Abs
Gage
HEIGHT OF WATER LINE "H" IN HUNDREDTHS OF TANK DIAMETER FOR VARIOUS PERCENTAGES "%" OF CAPACITY

Fig. 2.

Percentage of water 44 per cent (from Fig 2).

Capacity of tank=1,000/44 per cent plus 5 per cent or 2,270 plus 5 per cent of 2,270=2,383, say 2,400 gallons.

The smaller portion of the chart in the lower left-hand corner of Fig. 2 indicates the height of the water line for any given percentage of water in the tank. This height, H, is expressed in hundredths of the tank diameter, D Thus for 25 per cent water the height of the water line would be .30 D or (with a 48-inch tank) .3×48=14.4 inches with the 5 per cent additional the total percentage of water would be 25 per cent+5 per cent=30 per cent; 30 per cent=.34 D or .34×48=16.3 inches.

If the pressure gauge on the tank reads 75 pounds and the water line is 18 inches above the bottom, what is the proper quantity of air in the tank?

Regardless of the capacity of the tank if it is 60 inches in diameter the water line at 50 pounds (gauge) should stand so that 5 per cent of the maximum quantity is still retained.

If at 50 pounds (gauge) initial air and 100 pounds (gauge) tank pressure 44 per cent of water is in the tank, with 5 per cent additional 44×5=2.2 per cent must be in when the pressure is at 50 pounds gauge and the height of the water line will then be .06×60=3.6 inches. In

(Continued on Page 78.)

QUESTIONS & ANSWERS

A GARAGE HEATING SYSTEM AND RANGE BOILER JOB, BOTH UNSATISFACTORY.

Editor "Domestic Engineering": I have a heating problem to solve, and I am going to ask you to help me.

The accompanying sketch (Fig. 1) illustrates a combination system which was installed by my predecessor. It never gave satisfaction, and it is now up to me to make it work.

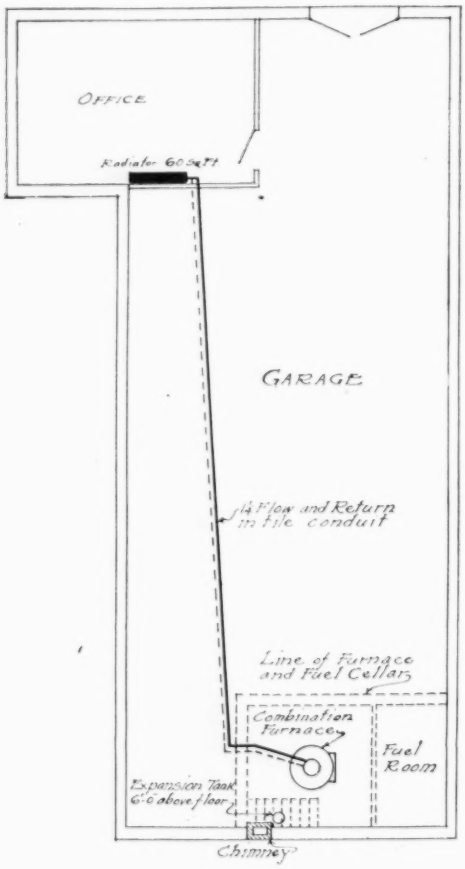


Fig. 1.

The main and return consist of 1¼-inch piping, laid in four-inch drain tile, packed with asbestos flour and laid under cement floor.

From top of water heater in furnace to top of radiator is not over five feet.

I claim the flow main should rise from heater to ceiling with a pitch up to a point above the radiator, and then drop down to radiator with a relief valve at the highest point.

I tried a relief valve to put the system under pressure, but still the radiator gets only slightly warm.

I also have a circulating system (Fig. 3), that doesn't work very well. I enclose a sketch of same for correction.

Kansas. R. J. A.

The sketch, mentioned in the above communication, is shown as Fig. 1. From correspondent's notes and data upon the drawing submitted and information given in his letter we glean the following:

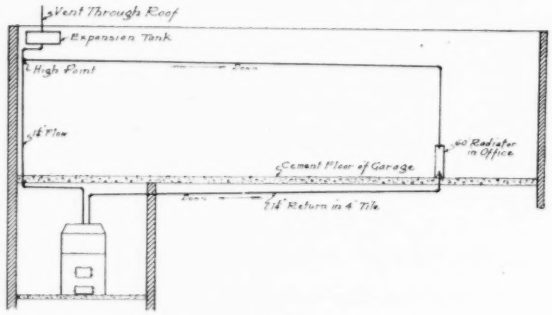


Fig. 2.

This is a combination hot air and hot water installation in a building used as a garage. The furnace (also the fuel room) is located in a small cellar or excavation at one end of the building and the hot water generator supplies the circulation to a 12 sec. 38-inch, 3 col. radiator (60 sq. ft.) to warm the office, which is located at the opposite end of the building, the radiator being about 75 feet from the furnace. The radiator is less than five feet above the top of the hot

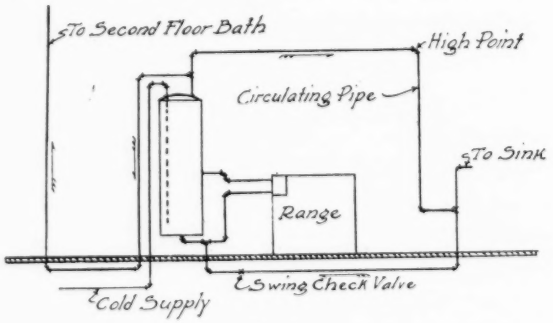


Fig. 3.

water generator in the furnace and is supplied by a 1¼-inch flow and return circuit run through 4-inch drain tile under the cement floor of the garage. These pipes evidently have but very little pitch.

There is no doubt but what the poor service is due to a sluggish circulation owing to the fact that, as at present installed, there is not enough energy or motive power to circulate the water effectually this distance (75 feet) from the furnace.

Correspondent's suggestion that the flow should be run

overhead to the radiator is a good one, and he is perfectly right in this connection. To give the best results the flow pipe should rise to a point near the ceiling of the garage and then run overhead to the radiator, dropping down at this point and supplying the radiator through a top connection. The return to the furnace can be taken out of the bottom tapping of the radiator and run through the drain as at present installed.

The high point of the main may be above the radiator, as suggested by correspondent, or it may be directly above the furnace. In the former case it should pitch up from the furnace to the radiator and in the latter case it should pitch down. In either event the air should be taken out of the system at the high point of the piping. The expansion tank should be located just above the high point and be vented to the atmosphere through the roof. Our sketch (Fig. 2) is intended to illustrate the method suggested without conforming to structural conditions or the location of the several parts of the system.

The sketch submitted by correspondent showing the circulating hot water system, which does not work well, is illustrated by Fig. 3. We cannot understand the use of the swing check valve shown in the circulating pipe. This valve we believe is a detriment to the circulation and should be removed.

Not having a plan showing the location of the fixtures it is rather difficult to advise as to a change in the method of

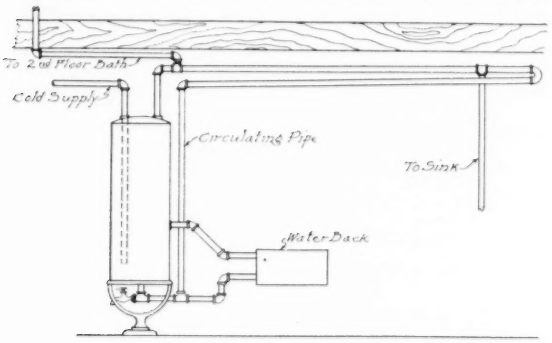


Fig. 4.

piping the job. There seems to be but one fixture (the sink) supplied by the circulating pipe. A circulating pipe will give better service, if a supply is taken off to a fixture above it through which it may be vented.

We submit a sketch (Fig. 4) showing an excellent method of installing the piping, if it is possible to connect the supply to the bath room from the circulating loop.

HEATING SYSTEM DOES NOT GIVE SATISFACTION.

Editor "Domestic Engineering": The accompanying sketch, Fig. 1, shows a rough sketch of a heating boiler and static head. I would like to receive your opinion on this arrangement. How far below the water line of the boiler should point A be to give the best results? Should A pitch down or up? I have three buildings to heat with one boiler: The main building; one building 20 ft. from boiler and another 60 ft. distant. The heating plant works well in the main building, but it does not give any satisfaction at all in the other two buildings.

Iowa. M. A. N.

The terms used by correspondent to designate the character of the system and the trouble experienced are somewhat confusing. His mention of the "water-line of the boiler" is confusing as this is without doubt a system of hot water circulation. The sketch accompanying the communication we have re-drawn and shew herewith. We have designated by letters such points of the system as we desire to refer to.

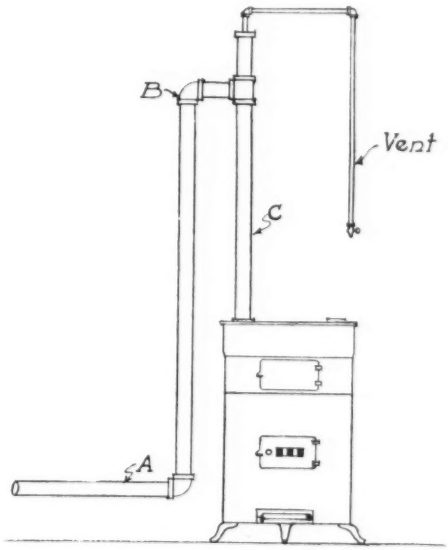


Fig. 1.

The distance from the "water-line of the boiler," or from the top of it, to point marked A, has no bearing upon the circulation of the job. The important question is the distance between A and B, or the height of the pipe C. The higher the pipe C is extended the more motive power is to be had to circulate the water through pipe A, which of course is due to the length of the drop pipe A—B or the difference in the specific gravity of the two columns of water.

We would therefore recommend that the pipe C be taken to a point as high as the ceiling of the second floor of the building or higher if circumstances will permit.

The air or vent pipe shown would indicate that this is a closed system. If it is an open system, as it should be (unless supplying one or more storage tanks), it would be better to install an expansion tank at the top of pipe C and vent the system direct to the atmosphere through a pipe, extending through the roof of the building. Pipe A should pitch downward from the heater in order that all air in it will work to the top of the loop.

COMMENT ON THE EXPLOSION OF A HOT WATER HEATING BOILER.

Editor "Domestic Engineering":—Herewith find clippings in regard to an explosion.

Everything that goes up nowadays is blamed to the war.

The early press articles dealing with this subject call it the work of pro-Germans and I. W. W. Opinions have changed the last 24 hours.

The opinions of the owner of the property, who states he was an engineer for more than eleven years, and of the Fire Chief are also interesting.

What is your opinion?

I am aware that you are only in possession of the facts, which you can gather from the articles. I have not

(Continued on Page 75.)

ENTENTE PLUMBING CORPORATION *to* RUSH WORK *on* INTERNATIONAL LIBERTY CONTRACT

Contract to Overhaul and Remodel Foul Hohenzollern System of Government Plumbing—Represents Hundreds of Billions of Dollars—Awarded in 1914—"Work to be Speeded Up and May be Completed During Year," Declare Lloyd George and Newton Baker, Foremen of Entente Corporation

By A. Plumber

THE Entente Plumbing Corporation, which now maintains branch offices in London, Paris, Washington, Rome, Tokio, Pekin and many other cities, was incorporated in 1914. This concern is a consolidated organization, co-operating in the installation of sanitary government plumbing.

The British-French & Belgium Plumbing Co., Ltd., was awarded the original contract for the installation of liberty fixtures, but the concern found that its resources were not adequate to fulfill the specifications, and it sub-let a portion of the contract to the following subsidiary concerns:

The United States Plumbing Co., the Italian Sanitary Engineering Co., the Servian & Roumanian Co., the Nippon Sanitary Co., the Celestial Plumbing Co., the Portuguese Co., the Siamese Plumbing Co., the Brazilian, Cuban & Haitian Plumbing Co.

The Entente Corporation had endeavored to complete the contract without the full co-operation of the United States Plumbing Co., but was finally obliged to invite its services in order that the contract might be thoroughly finished.

The Russian Plumbing Co. was formerly a strong unit of the corporation, but a large number of its workmen did not believe in co-operation in the installation of liberty fixtures for government plumbing, so they suddenly called a strike, and the company is now practically disorganized, having had various general managers in the past few months. Whether this company will again consolidate with the Entente corporation is a moot proposition.

Various of the subsidiary companies, particularly the United States Plumbing Co., have carried on a supply business as merchant plumbers, having furnished a vast quantity of lead, copper, steel and iron goods, which the corporation has installed since the contract was awarded in 1914. This fact accounts for the high price of these specialties. The United States Plumbing Co. installed a successful system of government plumbing in Cuba in 1898, overhauling and remodeling the obsolete Spanish system and installing liberty fixtures.

The Entente Plumbing Corporation has the job of finishing the biggest contract for government plumbing ever awarded—the overhauling and remodeling of a rotten system of plumbing, so full of the sewer gas of autocracy that it threatened to poison not only the atmosphere of the European apartments, but the air of the Democracy flats throughout the world.

The allied cost sheet shows that the expense of installing the popular liberty system of plumbing has already run into many billions of dollars. It is hoped that the overhauling and remodeling will be finished in 1918, although no contract time has been set. With the co-operation of the United States Plumbing Co., of which Woodrow Wilson is general manager, the Entente Corporation anticipates that the work will be completed within the next twelve months.

Liberty Fixtures Needed.

The tenants of democracy apartments, everywhere, have long complained of the menacing sewer gas of autocracy emanating from the antiquated Hohenzollern system of government plumbing, and a general overhauling, with plenty of lead work, is demanded in the interests of political and social health.

This worn-out and feudal method of plumbing was invented by one of the ancestors of an autocratic Prussian plumber, named William Hohenzollern, principal stockholder in the firm of William Hohenzollern & Co., of Berlin, owners of the big Teuton Autocracy Apartments.

The unsanitary phase of this system is its deplorable lack of liberty fixtures. It has been tolerated for generations, although it is true that a few popular liberty fixtures were installed during the past thirty years, as the result of dissatisfaction among the democratic tenants of the building who have always paid exorbitant rents to the Hohenzollern concern.

No doubt many of the present tenants would prefer to live in apartments of democracy, equipped with the vent piping of freedom, through which any germinating Junker odors and the sewer gas of autocracy might escape. Several millions of former tenants are now living in the apartments of democracy in America or elsewhere.

Strange to say, however, some of them still exhibit a preference for the apartments of autocracy in spite of the unhealthful Hohenzollern system of government fixtures.

Paradoxical as it may seem, there dwell, among the tenants of the Democracy apartments of America, those who would obstruct the work of the Entente Plumbing Corporation. They profess to be Americans. In spite of all this, however, they would be willing to permit the continuation of the Hohenzollern system of government plumbing. They are more silent now since the United States Plumbing Co. was merged with the Entente Corporation.

Autocracy Apartments Need Remodeling.

It is well known that the Hohenzollern company has never endeavored to remodel the plumbing in the apartments of autocracy. In consequence, the company has lost many millions of tenants who moved out and emigrated. What a loss of rental revenue for Landlord Wilhelm and his unscrupulous business associates! It would not be surprising, if a few million more tenants moved out or finally got their heads together and took possession of the old-fashioned building and did their own government plumbing, installing a profusion of liberty fixtures. Then wouldn't Wilhelm rave—"Donner und Blitzen! ! ! ! !"

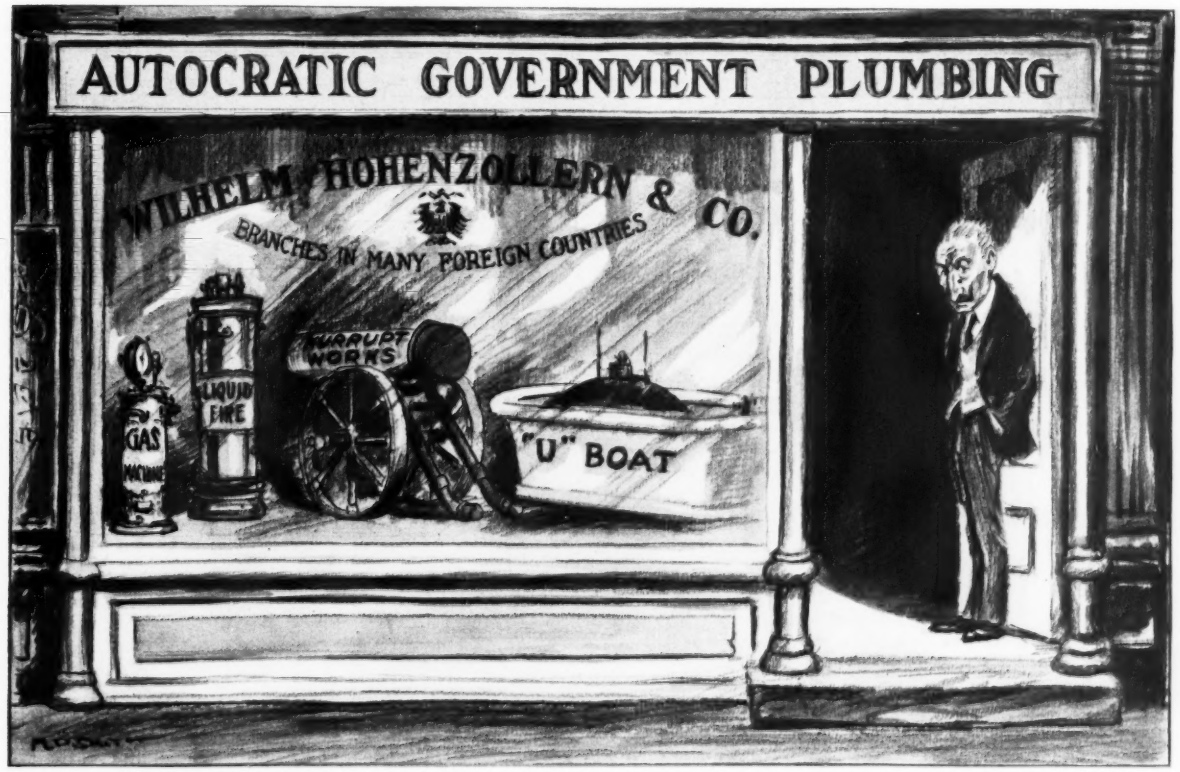
The firm of Hohenzollern & Co. is unquestionably a grasping, selfish, mercenary, and unprincipled concern, whose members deserve life imprisonment for their treatment of tenants, particularly in the new apartments of autocracy, constructed in Belgium, Servia and Roumania. Here we find the crudest type of Hohenzollern plumbing, reeking with the odor of barbarism.

The blue-blooded tenants of the apartments of Teuton autocracy have never objected to the Hohenzollern plumbing, clogged as it is with the festering waste of absolute monarchy, from which emanates the notorious Pan German stench. This abominable system is utterly lacking in even the ordinary septic tank methods of democracy, used for the disposal of any residue of despotism. A very strong democratic solvent is needed in order to clear the stoppage of liberty in the system.

The proud, blue-blooded tenants of these apartments have been accustomed to Hohenzollern plumbing since the days when Architect Bismarck re-drew the plans. The sewer gas of autocracy and the menacing odor of militarism are sweet incense to their imperialistic nostrils. They would die happy if they could only force the Entente Plumbing Corporation to adopt the sickening Hohenzollern system. They would rejoice exceedingly to see it installed in the apartments of democracy, north, south, east and west. They would delight in contaminating the pure air of freedom. They would welcome with wild acclaim the adoption of this cursed and worthless system. They would welcome its adoption because it would multiply the bacteria of Pan Germanism and breed diseases of tyranny and despotism in the body politic of the nations. Nothing would better please the firm of Hohenzollern & Co.

This menacing system, with its leakage of despotism,

(Continued on Page 78.)



"The Concealed Piping of the Hohenzollern System Has Been Condemned by Inspectors of Liberty Plumbing."

The DAY BOOK *of the* BON TON DE LUX PLUMBING & HEATING CO.

Hank Olson and Jerry Dolan Formed a Partnership and Opened a Plumbing and Heating Business January 1, 1918 —Dolan Has Decided to Keep a Day Book, in Which He Records the Interesting Happenings of the Day

January 1, 1918.

This is a holiday for some lucky folks, but nothing like that for Hank Olson and yours truly. Why? Well, just because last night we drew our last pay checks at Flannigan's, and last night and all day today Hank and I have been working like beavers getting our own shop ready for business tomorrow morning.

Tomorrow is the big day.

The painter put our signs on the window yesterday: "The Bon Ton de Lux Plumbing & Heating Co." "Dolan and Olson Proprietors." "Plumbing, Heating, Gasfitting, Sewer and Water Connections, Jobbing Promptly Attended to. Estimates Cheerfully Furnished. Walk In."

Some classy signs those are. Of course we didn't make them of gold leaf, because we figure that we will have to get into a bigger place pretty soon, so there was no use going to that extra expense.

How do you like that name? Pretty classy. What? You see Hank was strong for that Bon Ton, because he says that we are going after the classy trade and have to put up a front and that Bon Ton is French for class and front. And that De Lux sure made a hit with me, because a Jane that I know pretty well is slinging sodas in one of those Greek candy stores, that is full of mirrors and all that kind of dog, and that is the name of the candy shop, and so you see it made a hit with me, and then, of course, you know that De Lux is French for lucky just like they spell Christmas with an X, and this sure looks like a lucky move for me and Hank, and a darned unlucky one for Old Man Flannigan, because we left him flat and he can't get hold of any mechanics like me and Hank in a hurry.

January 2, 1918.

I blew in here about six minutes after 6 this morning, and Hank came in right after me. Gee, the streets look funny at 6 bells in the morning.

Me and Hank got busy and cleaned up the store a little. A little later the Chink laundryman from across the street came in and wanted a bibb packed, and a little later a colored gentleman came in to order a gas stove connected.

Old Man Flannigan drifted in about 11:00 a. m. He said that he wanted to wish us success, but I think he wanted to see what a real live plumbing shop looked like. He asked me why we didn't put a little more paint on our windows. I can see that he is peeved because you see all that he has on his windows is "Flannigan, Sanitary Engineering."

January 3, 1918.

Well, we didn't do much yesterday. One or two small jobs in addition to the Chink and the Coon. Hank attended to them. I was busy in the office. About fourteen salesmen called, and everyone of them stayed an hour or two. Of course, they can see that we are going to get the business, and they want to get in on it. Had a telephone call a few minutes ago from a man who wanted a price for setting a water meter. I stalled around awhile. Gee, I wonder, if they used to call up Old Man Flannigan like this. Perhaps that is why he used to be grouchy once in awhile. But how in h— can a fellow tell, what it will cost to set a water meter without knowing the actual conditions! Finally I found that this fellow lives out at the second Lake Harriet loop and he wants me to send out and give him a price on the job. I told him that we will send out and set the meter and charge him for the actual time together with a charge for the material used, but he is a hard-boiled egg and says that he got stung that way once before. It looked, as if he wanted to sting me, so I made it strong and told him we would set the meter for $3. Of course Hank can make it in about two hours, if he has good luck and it will only take one little ¾-inch stop cock, and that can't cost so very much, because the salesman is giving me 50 and 5 and an extra 5 off on them. That is sure some price. Old Man Flannigan would throw a fit if he knew we were buying them as cheap as that. The salesman told me to keep it under my hat. Hank is pretty husky, so he can carry the meter and a few fittings and a cutter and a die stock right along with him, and that will save a trip back to the shop.

January 4, 1918.

A fellow came in with a set of plans for a house this morning and wanted me to give him a figure on the job. I told him that Hank did most of the figuring, and that he was out and if he would leave the plans that we would figure them. He said all right, and he also told me that Old Man Flannigan used to do some work for him, but Flannigan was a robber, riding around in a great big car and not getting down to the office until 8 or half past every morning, and so he wanted to do business with some early birds that knew a good thing when they saw it. That's us all right. This fellow is going to put up twenty-three houses just about like this one, and if we are right on the first one and do a bang-up job, he will give us the rest of them without any competition. As soon as he left I called up one of the supply houses and got hold of Blackwell, one of their salesmen, and he is coming over in the morning to figure this job for me and Hank. You know Blackwell used to be in the plumbing business, but he cleaned up a bunch of kale and hopped out of it to get in the big game. One of the other salesmen tells me that Blackwell left some

of the wholesalers to hold the bag, but I guess these fellows like to knock the successful fellows. I used to knock Rockefeller and the rest of the plutes, until I got in the game myself, but now I can see where they got some rights, too.

January 5, 1918.

Me and Blackwell and Hank figured up the job for that contractor, and when he came in I gave him the price, and he grabbed his plans and started for the door like the floor was greased, but I beat him to the handle and asked him what his hurry was, and he said that our price was a mile high. Well, anyhow, he came back and we talked it over for awhile. You see me and Blackwell and Hank figured that the cost of the labor and the material was $385, and of course there is a 5 per cent discount on the material, if paid by the 15th of the month, after we get it, and so we gave him a price of $400 for the job. Well, come to find out, those slickers down the street, Burke & Carlsen, have given him a price of $375, because they were figuring to get those other twenty-three houses. And, of course, Burke & Carlsen have been in the game about a year now, and they ought to know what these things cost, and so we just beat them to it by taking this job for $370. Not much else doing, but we got a contract to start with, anyhow.

January 6, 1918

Me and Hank didn't draw any coin Saturday night. You see we didn't do very much last week, and there wasn't very much that came in, but this week will be better. Nothing doing today, this being Sunday, but I drifted down to the shop to see how things looked around there, and she sure looks good to me.

January 7, 1918.

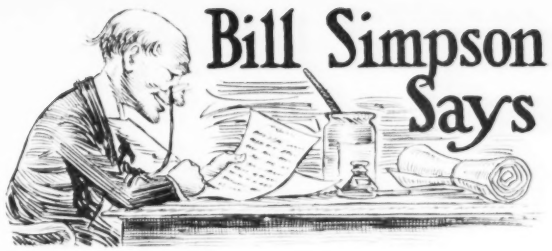
It turned pretty cold last night and we have sure been hitting the ball today. Freeze-ups everywhere. Some people think that me and Hank is a quartette from the way they holler about getting their jobs done, but we are doing the best we can and, that is going some, you bet. We got to get somebody to stay in the office for us, these salesmen that come around are all right, and it is all right to let them run the shop while a fellow runs out to do little job of thawing, or packing a bibb, or opening a waste pipe, or something, but every time we leave one of them birds to run the shop, they use up all of Hank's tobacco and matches, and then I have to go out and buy some more, and then they always want an order. I guess they know that we are going to get the big business in this town, but then there is no use buying all the stock they got, anyhow.

(To be Continued.)

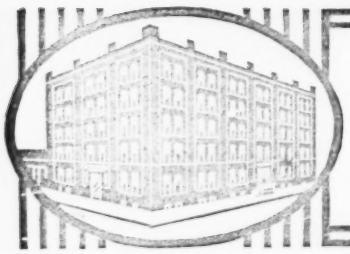
Trombones Out of Step.

Colonel G—— is a fine commander, but not a musician. He sent for the chief musician of his regimental band one day and delivered this scathing criticism:

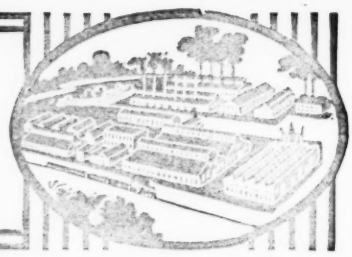
"I notice a lack of uniformity about the band which must be regulated. Yesterday morning they were out on parade, and the largest man in the band was playing a little bit of an instrument—flute or something of the kind—and you had the big drum played by a small man. That sort of thing doesn't look well, and must be attended to. I want the small men to play small instruments and the big men the big instruments. And another thing—I want the trombone players to slide their instruments in and out in unison. It annoys me to see them all out of step with their hands."—Pittsburgh Chronicle Dispatch.



I was down to
* * *
the Opry House Last
* * *
Nite, with My wife,
* * *
we Went to See Bill
* * *
Farnum Lick the stuff-
* * *
ings out of some other
* * *
Big Fellow. And before
* * *
the big fite started, they
* * *
Showed some Lantern Slides.
* * *
I looked at them because
* * *
it Was dark and, there was
* * *
no Other Place to Look.
* * *
And—It was Funny, too,
* * *
That John Smith, the Up-to-
* * *
date Plumber down on Main
* * *
Street, had a lantern slide
* * *
Which sed: "If your pipes
* * *
Freeze up Don't call them
* * *
Names but Call Smith, the
* * *
Up-To-Date Plumber, and he'll
* * *
Fix them in a hurry at a
* * *
reasonable Figure." And—
* * *
the very next Morning my
* * *
Pipes were frozen up and
* * *
one of them busted, so I
* * *
Just Called Smith.
* * *
Those fellows that adver-
* * *
tise deserve the buziness
* * *
and they Generally Get it.



Among the Wholesalers and Manufacturers



COMPANIES RECENTLY INCORPORATED.

The Packless Quick-Closing Valve Co., of Cleveland, O., has been incorporated with a capital of $100,000. The incorporators are J. W. Dearing, F. M. Hobbs, F. K. Denny, Frank L. Mulholland and Charles Hartmann.

The Henry Stoner Supply Co., of Canton, O., has been incorporated with a capital of $10,000, to deal in plumbing specialties. The incorporators are G. O. Moon and G. W. Cornelius.

H. L. HURST MFG. CO. MOVES TO GREENWICH, O.

The H. L. Hurst Mfg. Co. has moved its factory and general offices from Canton, O., to Greenwich, O., where a new plant was recently completed for its occupation. This new plant was built on the daylight construction plan and includes every facility for efficient manufacturing. It is strictly fireproof, nothing but concrete, glass and steel being used in its construction. Greenwich is located on the Baltimore & Ohio and the Big Four railroads, and the company is therefore well located in regard to shipping facilities.

HINTON C. CLABAUGH AND SERGEANT B. S. WOLF TO ADDRESS MEMBERS OF ILLINOIS CHAPTER.

Hinton G. Clabaugh, superintendent of the federal department of justice at Chicago, and Sergeant B. S. Wolf, of the 13th Engineers, U. S. A., wounded in France and who was on board the torpedoed steamship Finland, will address the Illinois Chapter of the American Society of Heating and Ventilating Engineers, at its January meeting and dinner, to be held on Monday evening, January 14, at 6:30 p. m., at the Engineer's Club, 314 Federal Street, Chicago.

Mr. Clabaugh will speak on "Constructive Detective Work at Home," while Sergeant Wolf will discuss "Engineering Problems At the Front."

These addresses will be of more than usual interest, and President Hill and Secretary Stacey are looking forward to an excellent attendance of members and guests.

TWO CLEVELAND PLUMBING SUPPLY HOUSES CONSOLIDATE.

H. S. Rivitz, of H. S. Rivitz & Co., of Cleveland, Ohio, has just announced that he has purchased the entire business and stock of the E. W. Fisher Co., one of the oldest plumbing supply houses in that city. Some of the Fisher stock is now being sold out and the balance is being moved into the Rivitz warehouses. The Fisher display and warehouses at 811 Superior Avenue will be discontinued when the lease expires, which happens April 1, 1918, and the E. W. Fisher Co. will dissolve and go out of business. J. H. Lehmann, secretary and treasurer of the Fisher concern, who has been the general manager of its business, intends to enter another line of trade. H. S. Rivitz & Co. have from a small beginning built up a large business and in taking over the Fisher organization the Rivitz concern will materially increase its sales force. It is Mr. Rivitz' intention to erect a large office and warehouse building with railroad facilities as soon as the war is ended, at which time the business will be incorporated and the heads of the various departments will be given a working interest in the capital stock of the company.

OHIO BLOWER CO.'S SALESMEN IN CONVENTION.

The Ohio Blower Co., of Cleveland, O., held its annual salesmen's convention at the Winton Hotel in that city, on Thursday, Friday and Saturday, January 3rd, 4th and 5th.

GAVE EMPLOYES LIBERTY BONDS.

The Brown-Wales Co., of Boston, Mass., presented Liberty Bonds as Christmas gifts to its employes, varying in value according to the length of the time each had been in the employ of the company. In addition to this the office was closed from Saturday noon until Wednesday morning, thus giving everyone a nice holiday vacation.

CLOW SALESMEN'S ANNUAL CONVENTION.

The annual convention of the sales force of James B. Clow & Sons was held at the concern's general offices in Chicago, on Thursday and Friday, December 27th and 28th, a morning and afternoon session being held on each day. Considerable time was devoted to a review of the problems presented by the unusual business conditions in 1917, and to a discussion of the problems to be solved during 1918.

Much attention was also given to an intimate study of the R. U. V. water sterilizer and to the Madden automatic water closets, P. J. Madden, the inventor of the latter, addressing the salesmen on some of his recent inventions in this line.

L. H. Pleine, of the Sanitary Engineering Department, delivered an interesting talk on the value, to the plumber, of properly prepared plans, showing supply waste and vent piping and properly prepared specifications. He emphasized the point that, if all architects would accompany their plans with proper drawings for the plumbing installation, there would not be such great difference in the bids of competing plumbers.

Films illustrating the processes in the manufacture of vitreous and porcelain enameled iron ware and of plumbers' brass goods were shown through the courtesy of the Standard Sanitary Mfg. Co.

President W. E. Clow and Vice-President W. E. Clow, Jr., gave very interesting talks on the unusual business conditions and congratulated the salesmen on their success under such circumstances.

The convention culminated in a banquet at the Union League Club, where plates were laid for 78 of the sales force. A very interesting program was carried out, and many of the salesmen demonstrated that they were not only successful salesmen, but likewise successful as after-dinner speakers. W. E. Clow, Jr., at the very last moment, made the surprising announcement that he had enlisted in the United States Navy as a second-class seaman. He entered the Naval Training Station, at North

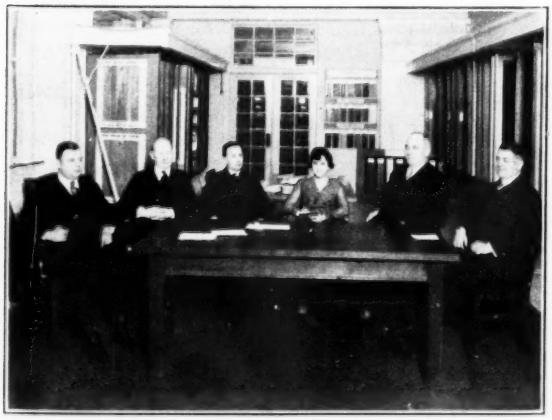
Kent S. Clow.

W. E. Clow, Jr.

Chicago, January 2nd, where, after a training of three months, he will begin active service. Mr. Clow is 33 years of age and consequently not subject to draft. From one having a promising future in the commercial world, this is a commendable demonstration of patriotism. Kent S. Clow is serving with the Hoover Food Administration in Washington, so that with W. E. Clow, Jr., in the navy, W. E. Clow, Sr., is left with the entire responsibility of the Clow business. The efficient organization that the concern has built up, will prove its value during the coming strenuous times.

DISTRICT MEETING OF SALESMEN OF BURNETT-LARSH MFG. CO.

The annual meeting of the salesmen of District No. 10, of the Burnett-Larsh Mfg. Co., of Dayton, O., was held on Friday and Saturday, December 28th and 29th, in the convention hall of the Building Material Exhibit, 175 West Jackson Boulevard, Chicago. Business questions were discussed and plans for the future distribution of the concern's products were considered. The sales representatives predicted bright business prospects for the coming months. On Friday evening a banquet was tendered the salesmen at the Hotel Sherman. Among those present were the following: E. C. Wendell, northern Illinois; John Hinton, eastern and southern Illinois; G. H. Young, Chicago branch manager; H. R. Williams, Wisconsin; J. F. Dare, western and southern Illinois, and E. H. Bescher, manager of the service department.



The Burnett-Larsh Mfg. Co.'s "District No. 10" Salesmen in Convention.—From left to right: E. C. Wendell, John Hinton, G. H. Young, Miss Diamond, H. R. Williams and J. F. Dare.

B. O. Tilden, president of the American Sanitary Works, Trenton, N. J., passed through Chicago this week on his return from Honolulu.

S. C. Dickey, of the Chicago office of the Youngstown Sheet & Tube Co., of Youngstown, O., has been promoted to the position of manager of the company's branch office in Denver, Colo.

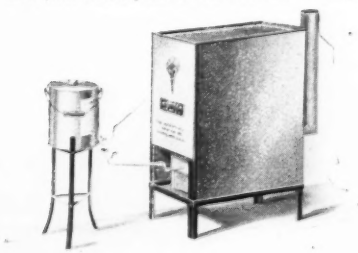
J. B. Bernhard, manager of the boiler department of the Kanawha Mfg. Co., Charleston, W. Va., has recently moved with his family from that city to Chicago, where he will make his home in the future.

Professor John R. Allen, of Minneapolis, Minn., dean of the College of Engineering and Architecture, University of Minnesota, passed through Chicago this week en route to Washington, D. C., to attend a conference in connection with his work in the Signal Service Department of the Government.

E. A. Morris, secretary of the Detroit Lead Pipe Works, Detroit, Mich., was in Chicago Monday on his return trip from Portland, Ore., where he spent the holidays with Mrs. Morris, their daughter and family. Mr. Morris reported "ideal weather" in Portland, rain thirty days out of thirty-one, with fourteen inches of rain in December; but the roses were in bloom in the gardens and the lawns were green, some contrast to Chicago on his arrival here Sunday night, in the midst of snowstorm with fifteen inches of snow.

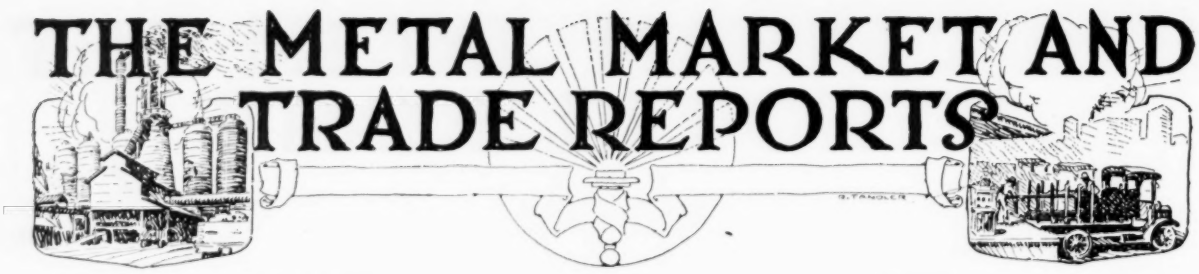
AN OIL-BURNING GARAGE HEATER.

The accompanying cut illustrates a garage heater, which has just been placed on the market by the Scientific Heater Co., of Cleveland, O. This heater is designed to burn either fuel oil or kerosene. It is wickless and the manufacturers describe it as being constructed on the principle of the miner's safety lamp, by which all air for combustion is taken through a fine gauze and through which no flame will pass; and they add that it is built so that all heat escapes from the top and none is radiated from the sides, thus making it practical for garages where there is little space between car and wall.



New Oil-Burning Garage Heater.

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

The Government is planning to take over the mining industries of the country in the same manner as it has the railroads. It is proposed to introduce a bill in the House authorizing the President to appoint a director of mines, which will be followed with the necessary legislation to complete the plan of mining control. The minerals specially designated are coal, iron and petroleum, also chemicals and mineral oils are specified. The motive for such action is a general speeding up of mineral resources by co-ordinated effort so as to produce the greatest results in the ultimate production of the steel and iron required for war purposes. As matters stand the Government is in virtual control by agreement and otherwise, of the coal, coke, iron ore, pig iron and steel producing industries of the nation. Its needs for all these commodities must be filled before other buyers may receive consideration, and the prices have been fixed for the public as well as the Government. The latter holds the key to the entire industrial situation in this way and by its temporary ownership of the railroads, some doubt might arise as to how the general efficiency of the steel industry, for instance, could be materially improved by the acquisition of the coal and iron mines. It would, however, tend to remove possible friction between certain conflicting interests by the transfer of several ownership to a central body, which is probably the aim sought by the Administration. The outturn of steel, while extraordinary, is not up to the requirements of the nation. All that can be done is being done by the steel mills to increase this output and for any interference in production the causes must be sought among the primary sources of the raw materials supply. There has been no complaint regarding a shortage of iron ore, but there has been a most serious shortage of coke which has affected the production of pig iron and consequently of steel.

There is nothing new in the iron situation. Demand is, or would be, very heavy if the means were at hand to supply it. There is no supply of spot or prompt delivery available for the next three months, except in contracts already made. A little business in Southern for second quarter has been reported, but most furnaces in all producing sections are well sold over the first half and some of them even for the entire year. The uncertainty of the coke situation, and the fact that all furnaces are more or less behind on their contracts operate against the encouragement of any new business at this time. There is no certainty as to what prices will be after April 1st, which is another reason for the reluctance of the furnaces to take on further obligations. There is considerable complaint in the East over delays in transit from the South, which have grown to be out of all reason. Instances are cited of iron shipped in early November, which has not yet reached destination. Many foundries also are suffering from priority regulations, which provide that others working war orders be served first. Prices are based upon the old standard grades of No 2 foundry and basic iron at $33, furnace, and will last at least until April 1st.

Copper.

There is no change in the position of copper nor is there any prospect of one for at least three months. Commissioners are satisfied, and there is no reason why they should not be. The larger consumers are protected in the assurance of a steady and uniform price. The requirements of the Government are not made known, but it is plain that they must be large and that the Allied nations are heavy buyers. Consumption for ordinary commercial use has been curtailed to offset the consumption for war purposes. But supply seems to be ample for all demands.

Tin.

The local domestic tin market can hardly be quoted for the reason that there is no spot tin for sale, and while there have been tentative offers to sell futures there have been no buyers. The new British regulations forbid shipment of tin from London, but allow shipments to go forward from the Straits and the Far East. There is a considerable quantity of tin in London purchased by Americans, and they are waiting to learn whether this particular metal will be allowed a shipping permit. If not, the market here will be in a bad way because there is no spot supply and to bring it in from the East will require from sixty to ninety days. Freight and insurance will be less than via London. It is not so much the expense as it is getting the tin that concerns dealers. Straits tin, January shipment from Singapore, has been offered at 63¾ cents and Chinese No. 1 January-February at 58½ cents.

Lead.

The market is firm although demand for lead is light. The strength is attributed to the difficulty in getting supply to the East from Western producing points. Embargo obstructions and delays in railroad transit have operated against the accumulation of supply in the local markets. The American Smelting and Refining company advanced prices ¼ cent a pound, which brought this quotation up to 6½ cents New York. Independents quote prices at 6¾ cents to 7 cents, New York, for spot, and 6⅝ cents to 6⅞ cents, East St. Louis.

Spe'ter.

The market spelter remains very quiet except for Government orders, details of which have been withheld. Spot and January are quoted at 7¾ cents to 8 cents, New York, and 7⅝ cents to 7¾ cents, East St. Louis.

Old Metals.

The following prices are current for old materials:

	Buying	Selling
Copper, heavy cut and crucible	23 cents	23½ cents
Copper, heavy and wire	22 cents	23½ cents
Copper, light and bottoms	19 cents	21½ cents
Heavy machinery composition	22 cents	24 cents
Brass, heavy	14½ cents	16½ cents
Brass, light	11¼ cents	12 cents
Lead, heavy	5¾ cents	6¼ cents
Tea lead	4½ cents	5½ cents
Lead scrap	5¼ cents	6¼ cents
Zinc scrap	5¼ cents	6¼ cents

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Chicago and Vicinity.

J. J. Daly, of 408 Wells Street, has been awarded the contract for the installation of the plumbing system in three warehouses to be built, at a total cost of $400,000, at 3900-32 South Ashland Avenue. The heating system will be installed by Baker & Smith Co., of 408 Wells Street.

Noble & Thumm, of 2313 Lincoln Avenue, have been awarded the contract for installing the plumbing in a golf club building to be constructed, at a cost of $200,000, near Niles Center, Ill. The work will be started in the near future.

Frank E. Baker, 17 North Wabash Avenue, has secured the contract for the installation of the heating system in an addition to a junior high school to be erected at a cost of $120,000, at Mitchell, S. D.

The Phillips-Getschow Co., of 130 West Kinzie Street, will install the heating system in a residence and garage to be built at a cost of $100,000, at 2617-22 Farrell Street. The plumbing will be installed by William J. Lang, of 7 West Division Street.

V. A. Smith, of 213 Lake Street, was recently awarded the contract for installing the heating system in a new residence at 5106 North St. Louis Avenue.

The contract for the installation of modern plumbing in a building of four stores, at 1919-27 East 71st Street, has been awarded to Andrew McCann, of 1927 East 71st Street.

G. A. Leebody, of 3613 North Ashland Avenue, has secured the contract for the installation of modern plumbing in a bakery and barn to be built at a cost of $15,000, at 5035 North Western Avenue.

L. B. Piper, of 1258 Wrightwood Avenue, has been awarded the contract for the installation of a heating system in a dry-cleaning establishment to be erected at a cost of $10,000 at 3618 Lincoln Avenue. The plumbing contract was awarded to Peter Rech, of 2853 Belmont Avenue.

D. E. Kinsella, of 7309 Vincennes Road, has secured the contract for installing the plumbing in three apartment buildings to be erected at 7915, 7931 and 7951 La Fayette Avenue.

Baldwin & Glasson, of 208 Fifth Avenue, will install the heating system in a bungalow and garage, to be erected at a cost of $15,000, at 7201-3 South Paxton Avenue.

The Lewis F. Fritz Co., 135 North Market Street, which has been in business for a number of years, reports a very successful year. The concern has the distinction of having installed about 2,600 heating plants in the city within recent years.

In a recent report, issued by the Bureau of Public Efficiency, it is charged that Chicago spends $500,000 a year in pumping water that is only wasted. The bureau asks for the metering of all water service, also for a supply of greater purity, and further asks that the diversion of the water fund for corporate purposes be stopped. It is claimed that a saving of $4,000,000 over a period of thirty-three years can be effected by universal metering. It is pointed out that the cost of installing meters will be $9,000,000 during the first ten years and $200,000 per year afterwards. The annual cost of installing and repairing meters for the first ten years will be $290,000, and $575,000 a year after that. The bureau finds that in 1916 more than 250 gallons of water per day per person were pumped in Chicago, 60 per cent of which was wasted. During that same year it cost $450,000 for coal to pump water.

Chicago Master Plumbers' Association Re-Elects Officers at Annual Meeting.

At the annual meeting and banquet of the Chicago Master Plumbers' Association, held on the evening of January 5, at Schiller Hall, the following officers of the organization were re-elected:

President, Joseph W. Cannon; vice-president, Robert Hilton; secretary, F. W. Page; assistant secretary, Peter M. Munn; treasurer, E. C. Wagner; sergeant-at-arms, F. W. Fullmer. The board of directors is composed of the foregoing officers and the following gentlemen: Chas. F. Taffe, J. C. Naughton, John Delehant, J. J. Daly, Lewis Nelson and W. P. Arnold.

Over two hundred members attended the meeting and banquet. An attractive vaudeville entertainment was a feature of the evening. The business meeting was held from 7 p. m. until 9 p. m., when the members repaired to the festive board. President Cannon presided at the meeting. He read his annual report, a copy of which was ordered printed and sent to the members. He reviewed the activities of the year and referred to the plans of the organization to improve the condition of the local plumbing craft.

In the reports of the Secretary and Treasurer, the financial health and numercial strength of the association was mentioned.

A letter was read from National President L. McNamara, in which he regretted his inability to be present. A letter of warm greetings from A. W. Murray, plumbing inspector of Twin Falls, Idaho, and an honorary member of the association, was also read.

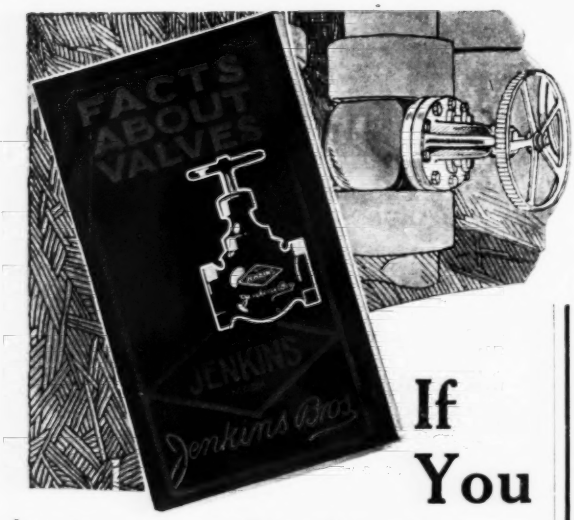
President Cannon was presented with a handsome diamond ring as a token of esteem and in recognition of his constructive services during the year. The presentation was made by E. J. Benning. President Cannon in his characteristic style, clean-cut and from the heart, thanked the members for this symbol of their regard.

It was announced that a memorial committee would be appointed to draft suitable resolutions of condolence on the recent deaths of the following members: J. A. Rock, 70 Austin Avenue; W. H. Cork, 750 East 72nd Street, and John Januszewski, 1330 Chapin Street.

Other Cities in the State.

The Reliable Plumbing & Heating Co., of Champaign, has secured the contract to install the plumbing and heating systems in a freight house and boiler room, which will soon be built in that city.

J. P. Kimber, of Spring Valley, has been awarded the con-



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tract for the installation of modern plumbing and heating in a church, which is to be built at a cost of $40,000, in that city.

F. D. Heinke, of Downer's Grove, has secured the contract for the installation of modern plumbing in a new $15,000 residence in Wilmette. The heating system will be installed by the Northwestern Heating Co., of Evanston.

Indiana

Indianapolis and Vicinity.

Any attempt to review Indiana building operations during the year 1917 necessarily brings within the scope of such a review the consideration of influences responsible for a general decline in building activities throughout the United States, resulting not so much in lessening the aggregate cost of the year's operations as in a decrease in the volume of private and public work as compared with that of preceding years.

What is true regarding the situation in Indiana is generally typical of the situation in other states in so far as the volume of private building is concerned. It was to be expected that high-class residential and speculative building would suffer most from war conditions, and, therefore, only few buildings of this class were constructed in Indiana during the past year.

The spring months of the year 1917 were characterized by a very substantial volume of construction work of all kinds. About midsummer, however, a panic seemed to strike the building industry with somewhat disheartening results, due, in a large measure, to confusion caused by government priority orders and the consequent congestion of transportation facilities and the disorganization of labor conditions. During the past month or two the building situation has been marked by gradual improvements as a result of a clearer understanding as to what materials are deemed essential and what non-essential to the government program and a corresponding readjustment of prices in conformity therewith.

The year 1917 in Indiana, as elsewhere, has been characterized by a marked increase in industrial building operations. Many new factories have been built and many additions and extensions made to old buildings on a scale never before attempted. Activity in this field of the building industry in Indiana, tending to compensate for the decrease in other directions, was necessary to meet the demands for industrial expansion in all lines due directly and indirectly to war orders.

Thus the year 1917 in Indiana has been one of extraordinary development and expansion in the direction of industrial construction and under development in the field of domestic, public and speculative buildings. The lines of increase in the volume of industrial building and decrease in domestic work have combined to confront the state with one of the most serious housing problems in its entire history. It, therefore, seems safe to assume that the pendulum will this year swing back to a more nearly normal position to the end that the homes and schools may take their proper place in the building program and keep apace with the country's industrial progress, even though we be at war.

The value of building operations in Indianapolis for the month of December was the lowest of any month since 1905. The operations for the month was valued at $85,943, compared with $527,644 for the preceding month, or a loss of $441,721. Statistics show that the total of building operations for the entire year was $1,831,592 less

than it was during the year 1916. The value of operations for 1916 was $8,934,694 as compared with $7,103,102.

About 125 employes of Hayes Bros., plumbing and heating contractors at 236-238 West Vermont Street, Indianapolis, were entertained by the firm Wednesday night, January 2nd, with a theater party at Kieth's Theater and a dinner at Stegemeier's Cafe. Joseph G. Hayes, a member of the board of county commissioners, and senior member of the firm, was master of ceremonies. The firm had a very successful year in 1917 and is optimistic in regard to the outlook for 1918.

Other Cities in the State.

Records compiled by the department of public buildings at Anderson show that more houses were built in that city in 1917 than during any previous year. The cost of the buildings and the improvements made during 1917 amounted to $250,937.25. This is $45,000 more than any previous year. During the year 288 permits were issued, ninety-seven of which were for new dwellings.

Although the official records show that the value of building operations at Newcastle for 1917 amounted to only $245,445, it is estimated that if the value of repairing the damage done by the tornado of March 11th was added, the building operations of the year would be far past the half million mark. The low estimate is due to the fact that owners of hundreds of homes, partly or wholly demolished by the tornado were not required to procure permits. The actual number of permits issued during the year, according to the records, was only 158.

Hart & Russell, of Marion, have received the contract for the installation of the heating system in the new First Baptist Church at Columbia City; consideration $4,260.

The D. E. Borgenstein Co., of Fort Wayne, is installing the heating plant in the city hall at Columbia City.

Charles H. Felton, of Crown Point, is completing the $3,500 heating, plumbing and electrical contract on the new Crawford Building, which is the largest store and office block in Crown Point.

California

San Francisco and Vicinity.

The general slump in private building continues to make itself felt throughout the larger Coast cities, new low records being established for recent years. No figures are available as to the volume of Government work during the last two or three months, but the total is known to be very large. There is also a good deal of construction going on in some of the smaller cities in the interior of the Coast states as well as in the cities in the mountain states. Just what the total volume of building for this western region is and how it compares with the same season in previous years is impossible to determine, but it is a significant fact that all the builders and contractors and men in the allied trades are busy and expect to be busy indefinitely.

San Francisco's building total for December, exclusive of Government work was $482,000, the smallest monthly total for a number of years. In Los Angeles the December total was $900,000, well up to the monthly average for the war period, but considerably below the pre-war average. In Oakland the December total was $244,000, below the average but not so small as some previous totals for the past year. In Sacramento the total of $166,000 was somewhat above the average for the past year. In the northern end of the Coast the situation seems to be spotted, Seattle coming through

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Men work better when they are kept supplied with cool drinking water—in fact, a thirsty man isn't much good.

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We want one live plumber in each community to get in touch with the different prospective users and offer a most attractive proposition. The principal thing you need is a sample fountain, installed under pressure in your own place of business, preferably where it can be seen from the street. It'll prove the best "silent salesman" you ever saw. As an inducement, we'll furnish you one Fountain at $10.00 less than the regular price.

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1. It has coil submerged in melted ice water, resulting in 100% cooling efficiency, a constant flow of chilled water whenever you want it.
2. Tank is galvanized iron. Legs are iron pipe. Makes a most substantial outfit.
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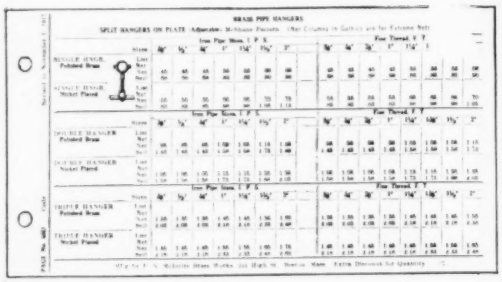
4. Guaranteed for Five Years.
5. Easily sold.
6. Carries a nice profit for you, in addition to profit on installation.
7. Practicools are made in two models—Model 1 is as illustrated; Model 2 differs from Model 1 in that it has tumbler fill in addition to bubbler.

GLAUBER BRASS MFG. CO.
Cleveland

Information on Tap

for the

Plumber and Steamfitter



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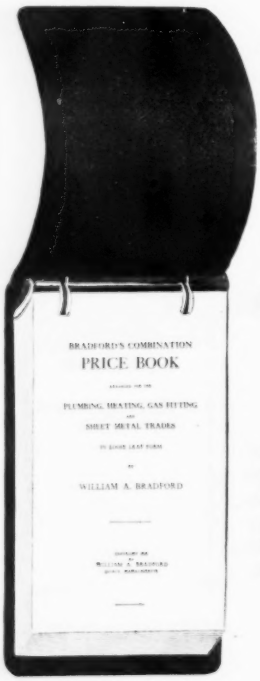
places at your finger's end the NET COST of every article required in the plumbing and heating trade, as well as the **Exact** RE-SALE price.



Saves many times its cost on time wasted in figuring and is sure to place the profits on the proper side of the ledger at the end of the year.

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Department C

5 Maple Street Quincy, Mass.

with a good average total of $545,000, and Portland dropping to $91,000, by far the lowest point reached in many years.

The Atlas Heating & Ventilating Co., of this city has been awarded the contract for the installation of steam heating and hot water storage systems for the new two-story and basement building being erected by the Roman Catholic Archbishop of San Francisco on Filbert Street, the value of the contract being $2,200.

Additional contracts for the University of California building on Sutter Street were announced this week as follows: Plumbing and tile work to the Scott Company for $10,975, and heating to Mangrum & Otter for $4,565.

Other Cities in the State.

Contracts were let this week for the installation of plumbing and heating in the Public Library buildings at 52nd Street and Telegraph Avenue and at 56th Street and San Pablo Avenue, in Oakland. Robert Dalziel was the successful bidder for the plumbing and sewering of the former at $1,799, for the heating of the same building at $2,194, the plumbing of the latter at $1,799, and the heating at $2,194.

The Board of Trustees of the Redondo Union High School is advertising for apparatus and material for the proposed heating and ventilating system in the Union High School at Redondo.

The Board of Public Works of Los Angeles has recommended to the City Council for the installation of an oil heating plant at the City's McPherson Street yard at a cost of about $7,700.

Howe Bros. have been awarded a contract for the installation of a piping system at the power plant of the County Hospital in Los Angeles, on their bid of $14,998.

The Constructing Quartermaster, with offices at San Pedro and Los Angeles, is calling for bids for constructing gas and water distribution systems at Fort McArthur, Cal.

The Board of City Trustees at El Segunda has passed the new plumbing ordinance which has been under consideration for some little time.

Tentative plans have been agreed on for the construction of a tri-county tubercular hospital at some point in the foothills of Tulare County at a cost of about $40,000. The three counties of Tulare, Kern and Kings will share in the cost of the building in proportion to population, and will have joint supervision.

Oregon

T. M. Barr, of Salem, has received the contract for installing heating and plumbing in the new passenger depot to be built by the Southern Pacific Co. at Salem.

Architect E. E. McClaran, Lumber Exchange Building, Portland, has been commissioned by the Josephine County court to prepare plans and specifications for a Carnegie library to be built at a cost of $15,000. A steam heating plant will be installed.

William Hanley, of Juntura, will now complete the hotel building started some time ago. The structure will cost $25,000, and a large steam heating plant will be installed.

Building permits for Portland during the month of November totaled $110,000 covering new buildings, and $218,930 for repairs and alterations. The gain in valuations over November of last year was 109.7 per cent. The number of plumbing permits issued in November was 181.

The Associated Oil Co., Portland, will erect a group of cottages adjoining its plant, to be occupied by employees of the company. The cottages will be equipped with modern plumbing and heating systems.

Finnegan Bros., Portland, secured the contract for the installation of a heating plant in the Goldendale, Wash., courthouse, for which bids were recently received. The plans provide for a vapor steam heating system. The contract amounts to $3,090.

An unusual and strong demand for small run-down properties in Portland, that can be purchased for a low price and on easy terms, has developed, the shipyard workers being the purchasers. It is stated that this class of property, so long a slow mover, will now change hands rapidly, if priced right.

W. P. Fuller & Co., of Portland, will build a large warehouse, to be equipped with a number of large steel storage tanks, each with capacity of 25,000 gallons.

Washington

Seattle and Vicinity

One of the most serious problems confronting the builders of Seattle is that of housing the 15,000 to 20,000 new workers who are coming to the Puget Sound country to work in the shipyards, and speed up the program of the U. S. Shipping Board. The Seattle Chamber of Commerce and Commercial Club's War Shipping Committee recently held a meeting that was attended by architects, shipyard owners, building material men, managers of public utilities and city officials, for the purpose of discussing the solution of the problem. It is the consensus of opinion that some definite action must be taken in order that such accommodations may be provided within 90 days, when the first contingent of workers is expected to arrive. It is urged that houses be built in large numbers on lands adjoining the shipyards. Another plan suggested is to remodel and equip dormitories and put them in shape for use of unmarried workmen who will be employed in the plants. Contractors, architects, real estate men and men of all the allied trades have set themseves resolutely to bring about a satisfactory adjustment of the housing conditions, and provide quarters for every workman who comes to Seattle.

The Seattle Real Estate Association at its recent meeting in reviewing conditions of the year just past, reported that the entire year had been an especially prosperous one. Figures submitted by the Master Builders' Association showed an enormous increase in costs of building materials and labor. Real estate operators are extremely optimistic, however, over the prospects for 1918, and predict that figures will approach in volume the 1906 record, with the absence of the inflated values and erratic market of that period, which covered the A. Y. P. Exposition.

Figures compiled by the Seattle Department of Buildings show that during the month of November, alterations and additions to old buildings aggregated in value $107,995. That new building is not wholly at a standstill is shown by the issue of permits for three fire-proof structures, one slow-burning, seven ordinary masonry and 303 frame buildings with an aggregate value of $393,000.

Plans have been completed for the proposed plant on Harbor Island, Seattle, for Rogers, Brown & Co. The project will cost $200,000, and will include a 250x604 ft. dock, and several buildings.

Kreielsheimer Bros., Lowman Building, Seattle, will erect a large hotel building to serve the industrial and shipbuild-

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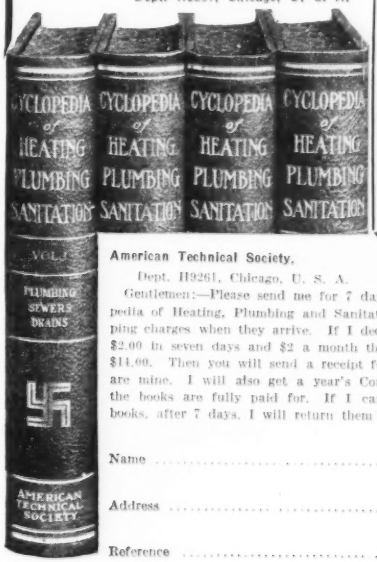
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ing industry in the Utah Street district. The structure will cost $35,000.

St. Anthony's Hospital Association, Seattle, will erect a hospital building to cost $80,000, to replace the present Minor Hospital. Work will be started early in the year.

The Arcade Building, Seattle, owned by the Whitcomb Estate, David Whitcomb, administrator, will be enlarged and extended at a cost of $50,000.

The Marion Building, Seattle, will be completely remodeled, and improvements added to make the structure strictly modern and up to date. New heating and plumbing systems will be installed. The building is six stories.

The National Engineering & Equipment Co., Seattle, recently received the contract for installing ventilating systems on four wooden vessels under construction by the Grays Harbor Motorship Co. The contract amounts to $7,000.

Considerable difficulty is being experienced in heating the Lincoln High School in Seattle with coal. The heating plant in the school was originally designed for oil burning, but during the fall, when the Government began a plan for oil conservation, a coal burner was installed. It has been found impossible on cold days to heat the building properly, and the School Board plans to take immediate steps to provide proper heating facilities.

The contract has been let to Charles W. Carkeek, Haight Building, Seattle, for the construction of the first unit of the new plant for the Pacific Oil Mills. The structure will be three stories, 60x120 ft., and cost $40,000. Plumbing and heating contracts will be awarded in the near future.

Tacoma and Vicinity.

From a business standpoint, the city of Tacoma experienced the best year during 1917 of any in its history, with lumber, the hotel business, and shipbuilding leading the way. Twenty-six ships were under construction in Tacoma shipyards, with an estimated value of $12,000,000. Three thousand workers are employed in the industry, and this number will be greatly increased during the coming year. This city has experienced an acute shortage of homes since the coming of the shipbuilding industry. Apartment houses are crowded to capacity, hotels are entirely occupied, and it is almost impossible to find a modern home for rent. The proximity of the American Lake cantonment has greatly increased the scarcity of homes, and while contractors and builders have built new houses with amazing rapidity, the supply has continued to lag behind the demand.

The city council of Tacoma plans the construction of two comfort stations in that city, to cost $5,000 each, one at each end of the city. Plans are now under way in the office of City Engineer Nicholson. One station will be located underground at 10th and A Streets, in connection with the new loading station and waiting room for the municipal carline.

The Construction Co., Tacoma, will construct 184 drying rooms, at a cost of $250,000, at Camp Lewis, American Lake cantonment. The buildings will be 20x40 ft., and one story high.

H. J. Schneider, Tacoma, will build six bungalows on North Washington and North 22nd Streets. Modern plumbing systems will be installed.

Spokane and Vicinity.

Building permits for the year 1917, in the city of Spokane, reached a valuation of $2,133,840, as compared with $1,586,787 for the year 1916. The largest single month was in May of this year, with a valuation of $476,310. The month of December showed a total of $271,865, the major portion of which was for the $250,000, six-story building to be erected by the Sperry Flour Co. The Smyth Plumbing Co., Spo-

kane, secured the contract for plumbing in the structure, at a cost of $25,000.

The Merriam Block, Spokane, which was destroyed by fire, with loss of $10,000, will be rebuilt as soon as insurance is adjusted. A modern plumbing system and an up-to-date heating plant will be installed.

The State Board of Control, Olympia, has rejected all bids for the construction of the State School for Girls at Grand Mound, and will not re-advertise the work until next spring. The reason given for postponing is that the lowest bid could not be brought within $12,000 of the amount available.

Henrikson & Co., Globe Block, Seattle, at $89,962 submitted low bid for construction of the new Olympia High School. This bid and two next lowest will be held for re-figuring, when changes to reduce the cost have been made ing the plans. The following bids were submitted for plumbing and sewerage: Ben Olson Co., Tacoma, $7,190; Rushlight & Hastorf, Portland, $7,481; Appling-Griggs Co., Tacoma and Portland, $6,958; William B. Coffey Plumbing Co., Tacoma, $6,988; A. Gehri & Co., Tacoma, $6,798; George L. Jones, Olympia, $6,997. The following bids were received for heating and ventilation: Rushlight & Hastorf, $22,227; C. A. Richardson, Tacoma, $26,679; A. Gehri & Co., $28,398; Ben Olson & Co., $27,800. Three low bidders will re-figure on revised plans. Heath & Gove, National Realty Building, Tacoma, and J. H. Wohleb, Olympia, are the architects.

J. W. Greene, Spokane, plans the construction in Tacoma of a $2,000,000 hotel building, it is reported. The Greene Security Co., headed by Mr. Greene, recently purchased the National Realty Building in Tacoma.

James Smyth, president, and Harry De Long, vice-president, both of the James Smyth Heating & Plumbing Co., of Spokane, returned recently for a vacation from Hog Island, Pa., where the company is installing plumbing and heating in the International Shipbuilding Co.'s plant, which is making ships for the United States Government. Mr. Smyth, who installed the plumbing and heating at Camp Custer at Battle Creek, Mich., for the Government, says that at one time they had in their employ at that place as high as 2,200 men. Mr. Smyth will return to Hog Island within a few days. Mr. DeLong will not return to Hog Island but will go to St. Paul, Minn., to close up work which the company has been doing for the Great Northern Railroad Company at points in Montana, North Dakota, Iowa, Minnesota and Glacier National Park.

The city of Vancouver, Wash., is facing the problem of finding houses for the growing population of the city, and civic organizations are giving serious consideration to the matter. There are no modern houses available for newcomers, the apartment houses are full, and some have long waiting lists. The increase in the population of the barracks brought many officers and soldiers' wives and families to the city, and the new shipyard has added a large number of other new residents.

Montana

The building inspector of Bozeman issued building permits totaling $45,000 during the month of November. Included in this were a number of small residences, a large laundry building, and several garages.

The city of Butte will construct a modern comfort station beneath the level of the street at either Park or Main Streets, or Broadway and Main. The station will contain a number of well-lighted and heated rest rooms.

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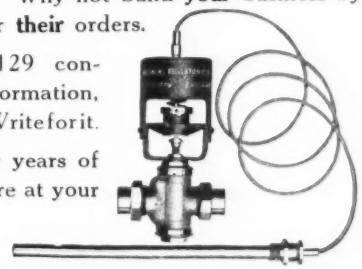

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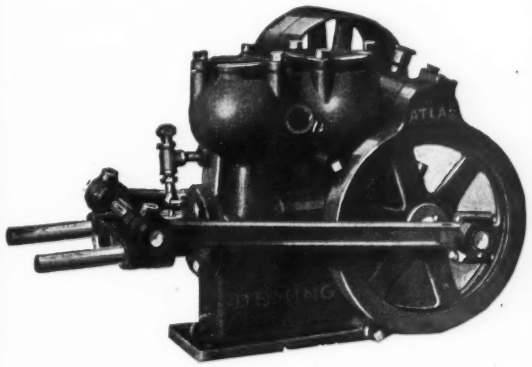

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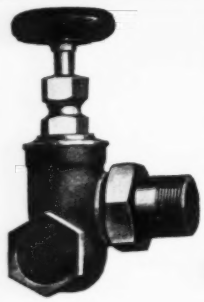

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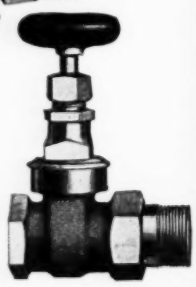

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Kentucky

Louisville and Vicinity.

An interesting meeting of the Louisville Master Plumbers' Association was held on Monday evening, January 7th, at the club headquarters at Fourth and Green Streets. At this meeting the newly elected officers were installed, following a light luncheon and smoker.

The principal topic related to the state plumbing law, held constitutional by the Court of Appeals, but held unconstitutional by all of the lower courts. It was stated that an effort would be made before the present session of the state legislature to have this law repealed, and failing here the association expects to carry the matter into the United States Courts, through the district court and to the supreme court if necessary, claiming that the law is drastic, unconstitutional and a form of class legislation. The committee to handle the matter is composed of George Schardein, chairman; B. B. Watts, W. H. Matlack, G. Phil Miller, Jacob Isaacs and William Hermann.

A number of excellent talks concerning the outlook for 1918 were heard from members present, the most optimistic talks being delivered by J. J. Bosemer, Ben B. Watts and George Schardein, all of whom are of the opinion that 1918 will prove a much better year than 1917.

When a collection was taken up for the benefit of the Red Cross it was discovered that the members of the local association are truly patriotic, as it developed after the contribution was taken up, that every member present subscribed to the Christmas Red Cross membership campaign in Louisville in December, while several members were on the Red Cross Honor Roll, having subscribed for every employe in their shops.

A discussion of present business conditions developed the fact that everyone is being overworked on jobbing or repair work at the present time, due to the results of the severe weather in December, when the coal and gas supply failed and many pipes were frozen. Members present stated that many complaints were made on this work after the dire need for it was passed, and many customers are kicking on how the work was done, as well as the price charged, regardless of the fact that plumbers were forced to climb out of the beds at night to do the "good fellow" act.

J. H. Burwinkle, master plumber of Louisville, who has been seriously ill for several weeks, will undergo an operation within a few days, or just as soon as his condition will permit it.

Theodore Ahrens, president of the Standard Sanitary Mfg. Co., of Pittsburgh, in an address before the Louisville Board of Aldermen, spoke on the subject of high taxation of all loan brokers in an effort to eliminate loan sharks, who rob the poor people of the city. Such a plan has been under consideration of the board for some time past. Mr. Ahrens warmly favored the plan, stating that a law of this sort, passed by the legislature, increasing the license fee from $200 to $1,000, would eliminate the loan sharks, and would be in line with laws now in effect in other states.

Damage was recently done to the plumbing establishment of J. Mivelaz, 640 South Preston street, when the store caught fire from an overheated flue shortly after midnight. Prompt action on the part of the fire department prevented the blaze from spreading.

Russell Hart, a master plumber of Louisville, who has been endeavoring to obtain apppointment as city plumbing inspector has been appointed a member of the fire hydrant department along with Julius Strohmier.

Superintendent Breidenbach, of the Owensboro, Ky., Water

Co., in handing in his report to the City Commissioners prior to resigning in favor of his successor, Asa Williams, stated that the municipal water company's machinery has degenerated into a worn out pile of junk, and advocated that the city operate the pumps with central station power until such a time as new boilers and equipment can be installed throughout, stating that practically all of the machinery is worn out, but can be used for some time if new boilers are installed.

The Board of Public Works, of Louisville, is planning to install a water heating plant in the City Hall building, which at present has no hot water connections.

City Gas Inspector Harry Limbach, of Louisville, and Joseph Lawton, assistant city attorney, have gone to West Virginia, to investigate conditions in the West Virginia field in an effort to place the blame for the shortage of gas in Louisville, which has resulted in the local gas company having to rebate thirty per cent on all December billls, under a contract with the city to keep up pressure at all times.

Things have been generally active in Louisville for several weeks past, and the heating and plumbing trade has been fairly busy. However, there is very little construction or building of any kind under way at the present time, and practically all work now being done consists of remodeling or repair work. However, there is enough of this work to keep most everyone busy, and things are far from draggy. It is claimed that plumbing throughout the city as a whole is in better sanitary condition at this time than ever before, largely due to the fact that residence property is in big demand, and the owners have been forced to place old shacks in good shape in order to obtain tenants. Even the poorest of tenants are getting in the habit of demanding sanitary or fair plumbing, and the owners are being forced to furnish such.

Versailles, through the city council has announced that starting the first of the year water rates will be increased 50 per cent. All customers paying a flat rate of $1 per month will be jumped to $1.50, while meter customers will pay 30 cents a thousand gallons, instead of 20 cents. The cost of operating has been so high that the plant has been losing money for some time.

Missouri

St. Louis real estate dealers and building men have come to the conclusion in practically all cases that the time is drawing to a close in St. Louis when prospective builders can delay their projects in the hope that materials will go lower than their present high levels.

While this is not so generally true of business property, buildings for storage and warehouse purposes and the like, it unquestionably is, and soon will be of the residences. Vacant property of all classes in St. Louis was reduced by 50 per cent. during the past year. A greater part of this reduction is accounted for in home property, 98 per cent. of the apartment houses being filled.

With houses scarce in St. Louis and the city confronted by a year of unprecedented industrial development, it is almost a certainty that houses will have to be erected in great numbers to satisfy the needs of industries here. St. Louis will have to send out of the state for a great part of its labor, skilled and unskilled, during the coming year, and it will be necessary to erect good houses at cheap rentals in order to keep them here.

It is probable, it was said this week, that an organized house-building movement, in which large employers of labor will be interested, will be started in the spring.

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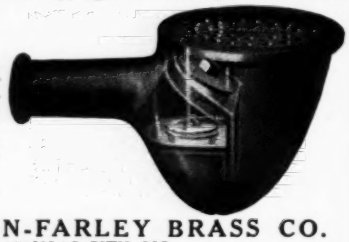

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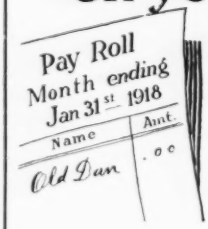

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Texas

Camp Travis Plumbing Installation Finished.

The work of installing, what is said to be the largest plumbing job ever undertaken in the United States, has just been completed at the cantonment at Camp Travis, San Antonio, Tex. The cost of this plumbing system represented an outlay of some $700,000, the laundry installation costing $200,000. The heating system, which has also been completed, amounted to $280,000. It took four months and five days to do the work, which was in charge of Carl Wallace, of Dallas. Associated with him were J. F. Hartman and Frank Culbertson, also of Dallas, who have now gone to Philadelphia to continue in the service of the Government, and Jacob Boll, formerly plumbing supervisor of the city of Dallas. Mr. Boll has gone to France, where he will have charge of the plumbing and heating installations in the cantonments, which are now being built for our Overseas Army.

Virginia

Leon M. Hewitt, manager and member of the plumbing and heating firm of Dunn & Hewitt, of Norton, reports that the last year was a very busy one for his firm. "We have completed some very nice heating and plumbing contracts, and have under way quite a few. Prospects look exceedingly good, for a number of heating plants for buildings, already constructed. Owing to the scarcity of building materials, and loyalty to our country, a number of good people in this section will postpone their contemplated constructions until the congested condition of transportation has been relieved, and it is generally agreed that this will be accomplished shortly, now that the Government has taken control of the railroads. We have inaugurated a profit sharing system, that is somewhat new to our organization, but one that Mr. Dunn and I have had under consideration for some time, as follows: Every employee, commencing and finishing the 'New Year' with us, will be paid a bonus of 5 per cent. of his salary. We believe that by this arrangement we will be able to keep the good mechanics that we now have, and thus give our customers prompt service, better work and save them money."

Ohio

Cleveland and Vicinity.

The Brainerd Plumbing Co., of 2062 East 22nd Street, on January 2d, filed a voluntary petition in bankruptcy in Federal court, although claiming that its assets exceeded its liabilities. Assets are listed at $21,726 and liabilities at $20,863.

School construction has been active during the past year and many more schools and annexes are on the building program for the coming year. Contracts let during the latter part of the year just closed include: Chesterfield addition: plumbing, gas fitting and sewers, to J. J. Comerford Co., $9,648; heating and ventilating to W. B. Van Sickle, $5,407; Gladstone school: plumbing, gasfitting and sewers, to Poplowsky Plumbing Co., $38,647; heating and ventilating, to Chappell-Warren Co., $46,600; addition to Empire School: plumbing, gasfitting and

sewers, to J. J. Comerford, $6,298; heating and ventilating, to J. Roemer Heating Co., $10,379; Mt. Pleasant addition: plumbing, gasfitting and sewers to Poplowsky Plumbing Co., $8,592; heating and ventilating to W. B. Van Sickle, $11,578; Rice school annex: plumbing, gasfitting and sewers, to Warden & Leese, $10,775; heating and ventilating, to J. Roemer Heating Co.

Cleveland Masters Fitters' Annual Banquet.

The fourth annual banquet of the Master Steam & Hot Water Fitters' Association, of Cleveland, was held in the Hofbrau on Monday evening, January 7th, with a good attendance. Master fitters and their friends listened to one of the best speaking programs since their organization, and were entertained during the dinner with a singing program and later with a cabaret, in which several prominent men in the trade took part. Among the famous persons present during the evening were General Von Hindenburg, Leon Trotzky, Nicholai Lenine and Nicholas Romanoff, all appearing for the first (and last) time anywhere in the masterpiece of the gifted Cossack playwright and toastmaster, Carlinski Mallettoff, entitled "Bucking the Hindenburg Line, or Taming the Bolsheviki." Executive Secretary Edward Bohm was stage manager and master of ceremonies.

During the banquet the members enjoyed some excellent violin, piano and vocal music, and whenever it seemed that the musicians needed any assistance the fitters were there with the big chorus led by the irrepressible Henry Henrichsen, chairman of the banquet committee, who presided at the foot of the hall, away from the watchful eye of the toastmaster. Other members of the entertainment committee were Messrs. Mallett, Jones, Bohnuek, Nachman, Watson and Warner.

The speaking program opened with the singing of the "Star Spangled Banner," and the keynote of the entire evening was one of cordial support of the National Administration in the prosecution of the war, and a willingness to sacrifice everything, should this be deemed necessary. In the meantime, in the opinion of all, it is the duty of the contracting steam fitters individually and collectively to keep a stiff upper lip, do the business in hand, talk optimism and not worry about the future.

Vice-President Charles Mallett, toastmaster, called first upon the newly elected president, Edward Maurer, who responded as follows:

"This is the time of all times for the government to cooperate with and aid trade associations. It is also the time for the trade associations to show an unselfish and loyal attitude toward the government. It is necessary now that the associations become strong and keep strong, financially and otherwise, not only for the purpose of stabilizing industry to meet the harsh demands of the war, but in order to render substantial financial support to the government in financing the war. As for our organization in Cleveland, I think the fact that we have been able to settle all labor differences satisfactorily, is alone sufficient to justify affiliation, and in this connection I can say that this has been accomplished with none but the best of good feeling between employer and employe.

"To fit the present situation of business in general and our business in particular I want to suggest a slogan which I think we would do well to keep in mind. It is this: 'More to Do and More to Be Done.' So long as we are a part of the industrial community it is our duty to the community as well as to ourselves, to try to get the government to encourage the manufacture of the supplies upon which we depend. Only in that way can we keep strong and be of value to the government in the carrying on of

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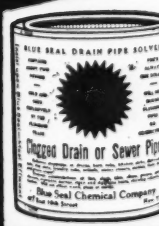
AT OUR EXPENSE

This liberal offer is for plumbers who have never used BLUE SEAL. It gives an opportunity to try at our expense the original Money Back Drain Pipe Solvent.

Cut out this advertisement, mail it direct to us with your own address—and your jobber's. We will then send you, transportation charges prepaid, six one dollar cans (2 lbs.) BLUE SEAL



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Use these six cans according to directions to clear waste and drain pipe stoppages. If the Solvent does all we claim for it you are to send us $3.60 (special price for plumbers) within ninety days. If not the trial costs you nothing.

10,000 plumbers now use Blue Seal. Over 300 jobbers stock, sell and recommend it. If you haven't used it, this is your opportunity.

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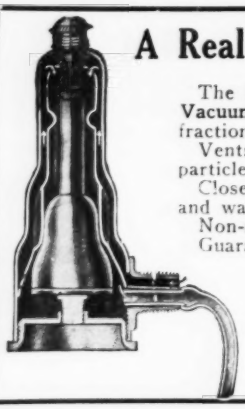

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Closes against loss of steam and water and return of air.
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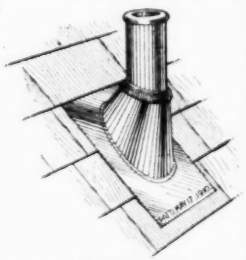

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The ORIGINAL Compound Lever Ball Cock, Elevated, Low-Down, Top and Bottom Supply. Tank Levers and Valves.

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50 CLIFF STREET NEW YORK

the war. We should make every effort toward this end, until the needs of the war alone demand all of the country's resources, and when that time comes, who here would not gladly quit.

"Let us cut out this talk of how the war is going to affect our business, and have for our motto, 'More Business and Plenty to Do.'

"I think this is a good time to caution everyone against economic waste, resulting from over-competition, a condition which should be eliminated, by all means, in war time. While the requirements in the heating trade are already amply taken care of, I do not consider it good policy from the standpoint of the community as a whole to undertake new enterprises along the same line."

J. B. Walker, of the Pittsburgh Heating Co. and president of the Master Steam Fitters' Association of Pittsburgh, was the next speaker. He paid a tribute to the civic development of Cleveland in adopting the comprehensive group plan for public buildings. In regard to business conditions, he urged a spirit of optimism as a war-time necessity. "Push, Don't Knock," should be your slogan, he said.

W. M. Pattison, of the W. M. Pattison Supply Co. of Cleveland, and member of the Council of National Defense, said: "Co-operation is the keynote to success. It is the opportunity of trade association to elimination of strife and build up the well being of the trade through co-operative measures. It is your duty to contend against price demoralization. Price should not be the criterion of value, but service and quality. Don't make your business a matter of price but of service." Mr. Pattison went out of his way to be present in spite of the carbuncle from which he was suffering. He urged the value of association work and announced the coming joint convention in Cleveland of the National and Southern Supply & Machinery Dealers Associations, American Supply & Machinery Manufacturers' Association, and the National Pipe and Supplies Association, May 13, 14, 15, 16 and 17, 1918. Mr. Pattison is one of the founders and a past president of the Pipe Association, as well as a past president of the National Supply & Machinery Dealers' organization.

W. B. Van Sickle, secretary of the Association, spoke a word for fair play in business: "Play hard but play fair, in everything you do," he said.

E. P. Roberts, of Akron, former smoke inspector of Cleveland, gave an entertaining talk in which the serious and humorous were so cleverly intermixed that there was usually a difference of opinion as to which was which. His subject was a "History of Heating and Ventilating in Ten Minutes." The toastmaster, who held a watch on him, said he took several ten minutes, but the audience thought the talk altogether too short. "The old slogan in war time used to be 'Stand By,'" said Mr. Roberts. "Now it is 'Carry on.' It means that we have a burden on our shoulders and that we must go forward."

Walter Klie, president of the Cleveland Master Plumbers' Association, was called upon for a few remarks. "The need of the hour is co-operation to conserve not only material but man power," he said. "Every organization, just like every business should keep itself strong financially to help the government.

"No two trades are closer together than the plumbers and steam fitters. We deal with the same customers and buy from the same jobbers to a large extent. I would like to suggest a series of common meetings of plumbers and steam fitters for the consideration of common problems, as this is a time when we need good healthy business conditions."

M. L. Crowell, chairman of the organization committee, spoke for a wider membership for the organization. "We are not a closed corporation," he said. "The door is open, and everyone is welcome, who is regularly engaged in the heating and ventilating business and who is doing business on the square."

At this point, Executive Secretary Bohm called the attention of the assembly to Mr. Crowell as the only living past President of the association, and paid him a tribute as the man who has done more than any other one man to bring the organization to its present high standard.

Tom Young, of the Standard Mfg Co., closed the speaking program with a few remarks which were well received.

Beside those above mentioned, the following were present: R. S. Evans, American Radiator Co.; Charles Bailey, Wm. H. Page Boiler Co.; George Spohn, Spohn Heating & Ventilating Co.; Frank H. Dow, of the J. H. McLain Co.; L. A. Hildie, of W. M. Pattison Supply Co.; W. Clark, Warden & Leese; Jack Vopal of U. S. Radiator Corporation; A. Growe, Warden & Leese; E. C. Buck, Strong-Carlisle & Hammond Co., P. Henrichsen, Henrichsen Bros., Edward Hobday, Industrial Association; P. Schomer, Schomer Heating & Ventilating Co.; Frank B. Hiller, Cleveland Metal Roofing & Ceiling Co.; A. L. Stowell, H. B. Smith Co.; Frank Maurer, Maurer Bros. Co.; H. A. Sonntag, Maurer Bros. Co.; Treasurer A. E. Welker, Price-Welker Co.; F. H. Winslow, Roberts & Winslow Co.; R. W. Webb, Bishop-Babcock-Becker Co.; E. L. Mullen, American Radiator Co.; J. Roemer; Lester Bryant, Lynch-Heisberg Co.; H. Johnson, Keasbey & Mattison Co.; Mr. Murphy, H. W. Johns-Manville Co.; Mr. Wilson, Lockwood-Leutkemeyer-Henry Co., Chester M. Harris, Marsh Valve Co.; Jas. Fitzgerald, Fairbanks Co.; George W. Owen, James Mason, D. Robertson; Fred K. Baird; Charles A. Saints, Baker-Dunbar-Allen Co.; H. W. Parker, Strong-Carlisle & Hammond Co.; F. T. Pierce, W. M. Pattison Supply Co.; F. R. Ryberg, Baker-Dunbar-Allen Co.; Mr. Melchers, Kelly & Jones Co.; L. Peckham, Jr.; H. S. Rivitz & Co.; F. A. Peckman, H. S. Rivitz & Co.; Mr. Porter, Standard Mfg. Co.; J. M. Chapman, Jr., Union Radiator Co.; L. H. Williams, National Radiator Co.; Charles L. Sobotta; Mr Brodie, Pittsburgh Piping & Equipment Co.; R. L. Clark, Keasbey & Mattison Co.; F. H. Valentine, Bishop-Babcock-Becker Co.; John H. Miller, Bishop-Babcock-Becker Co.; Guy M. Wells, "Domestic Engineering"; D. R. Robertson, Tomlinson Specialty Co.; L. A. Grainger, Torbensen Axle Co.; George J. Empkey, Schneider Plumbing Co., and J. Frank Hobnail, W. M. Pattison Supply Co.

New Jersey

Doty & Kesse of Clay Street, Newark, will do the plumbing and heating work in a new public garage on Bryant Street.

James Applin, of Morristown, has the contract for installing plumbing and heating systems in a new $18,000 residence on Georgian Road, for the Georgian Gardens Co.

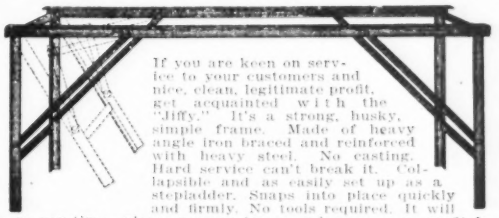
David J. Smith, of 155 Hobson Street, Newark, will install the heating system in a new residence on Girard Place, for Mrs. L. M. Gregory.

Bart Daress, of North Arlington, will install the heating system in a new $60,000 theatre building at Passaic. R. J. Schleich, of Clifton, will do the plumbing.

Jachnig & Peoples, of Newark, have secured the heating contract on a new $24,000 residence at Girard and Randolph Place, for Adolph Augenblick.

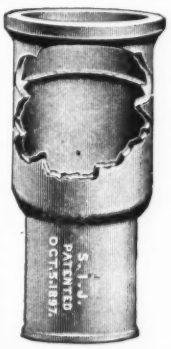
"JIFFY"

Collapsible Laundry Tray Frame



If you are keen on service to your customers and nice, clean, legitimate profit, get acquainted with the "Jiffy." It's a strong, husky, simple frame. Made of heavy angle iron braced and reinforced with heavy steel. No casting. Hard service can't break it. Collapsible and as easily set up as a stepladder. Snaps into place quickly and firmly. No tools required. It will save you time—please your customer and mean more profit for you. Ask your jobber.

THE FORD DONLEY CO., 1940 East 117th St., Cleveland, Ohio



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Saves time and money and makes it easier to connect up fittings to soil pipe already installed.

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does away with springing of stack and removing whole lengths of pipe. Cheaper and makes a most satisfactory job.

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should be included with every radiator you install. Your customer will gladly pay the extra cost and you make a nice, easy profit.

Hangs on back of radiator out of sight. Substantially made of galvanized iron. Keep filled with water—that's all. Humidifies air throughout the house.

We help to sell the SAVO and you install it. Write for free advertising material and full particulars.

SAVO MANUFACTURING CO.

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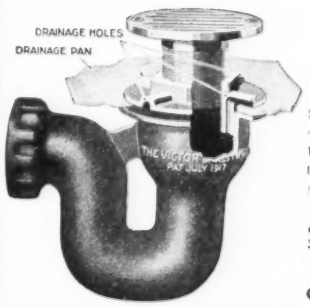

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American-Marsh

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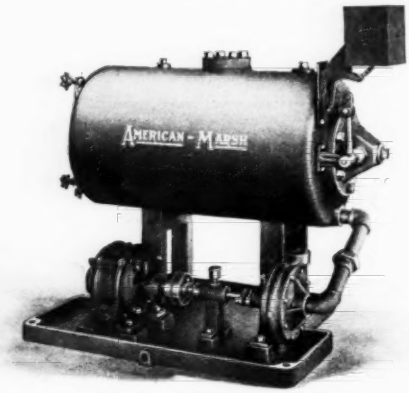

For use in returning the condensation to the boiler on heating systems where the steam pressure is too low to operate a steam pump. Water is returned to the boiler in its hottest state. Equipped with an automatic float valve which is positive and reliable. We also make a specialty of steam and motor driven vacuum pumps.

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L. WOLFF MANUFACTURING CO. TRADE MARK. CHICAGO.

Quality Plumbing

L. Wolff Manufacturing Co.

General Offices - 601 West Lake St.
Showrooms - 111 N. Dearborn St.

Chicago

William Umberhauer, of 155 Polk Street, Newark, has the contract for the plumbing work in the new service station and garage of Alexander Kertez on Broad Street.

Pennsylvania

Philadelphia and Vicinity.

C. H. Uber, of 5432 Chester Avenue, Philadelphia, has been awarded the plumbing contract in connection with the factory of the Tioga Steel & Iron Co., at Fifty-second and Grays Ferry Road; consideration $1,700.

William Bateman, formerly of Bateman & Lees, of this city, has associated himself with C. J. Doyle at Twenty-first and Pine Streets.

C. J. Doyle, of Twenty-first and Pine Streets, is installing the heating system in the new Philadelphia Hospital in this city.

New York

New York City and Vicinity.

J. F. Goss, of 103 Park Avenue, Manhattan, has the contract for remodeling the plumbing in A. J. Miller's residence on East Seventy-eighth Street. Baker Smith & Co., of Manhattan, will remodel the heating system.

Weber & Hamilton, of Long Island City, will do the heating work in a new residence at Kew Gardens, L. I., for Edgeworth Smith.

Adams Britz & Co., of 1761 Park Avenue, Manhattan, have secured the contract for the heating work in the addition to the Blackwells Island workhouse. Thos. S. Moran will do the plumbing work.

The William Gordon Corporation of 107 West Thirteenth Street, Manhattan, have secured the contract for the plumbing work in a new $600,000 office building in course of construction at Waterbury, Conn., for The Chase Rolling Mill Co.

Smith Bros., of Far Rockaway, L. I., will do the plumbing and heating work in two new $15,000 residences on Cedar Avenue, for Mrs. T. Dolan.

John R. Murchison, of 1101 Flatbush Avenue, Brooklyn, has the contract for the heating work in a new $35,000 residence on Maple Street, for W. H. Todd.

Louis Frisse, of 669 Bushwick Avenue, Brooklyn, has the contract for the heating and plumbing work in a new freight shed and office building at Browne and Imlay Streets, for the New York Dock Co.

B. Benson, of Nyack, has secured the contract for installing plumbing and heating systems in the new Rockland County Tuberculosis Hospital at Suffern.

Johnson Heating Co., of 131 East Twenty-sixth Street, Manhattan, is installing the heating system in a new greenhouse at the Bronx Park Botanical Gardens.

E. J. O'Brien & Bros., of 284 Rodney Street, Brooklyn, will do the heating work in a new garage on Hudson Ave., for A. C. L. Atterbury.

Buffalo and Vicinity.

William Krohn has recently established himself in the plumbing and heating business at 906 Main Street, under the name of the Krohn Plumbing Co. He was formerly engaged in the plumbing business at Flint, Mich.

William H. White, chief plumbing inspector of Buffalo, was installed as master of Queen City Lodge, No. 358, F. & A. M., for the second term, on Friday evening, January 4th.

Fred Bradley, a plumbing contractor of Buffalo, was elected sheriff of Erie County, of which Buffalo is the county seat, at the last election. He was sworn in on January 1st. Another master plumber, the Hon. Wm. H. Waldo, is representative in congress from the 38th district.

Massachusetts

Re-advertising for bids for plumbing in the proposed addition to the Stephen H. Gale Hospital at Haverhill resulted in a saving of nearly $800 to the city of Haverhill. The first bids were rejected, because they were too high, the lowest being that of the Haverhill House Heating Co., at $8,120. The new bids showed the Lamond Plumbing & Heating Co. to be low at $7,413. Other bids were: Haverhill House Heating Co., $8,120; Lawrence Plumbing & Heating Co., $8,280, and Thomas J. Murphy & Co., Boston, $8,340. The contract was awarded to the Lamond concern after a letter had been read at a meeting of the city council from the Haverhill House Heating Co., explaining that its figure could have been cut $725 had the specifications not called for ventilated traps, although the city ordinances do not provide that they be ventilated. The Lamond company's bid, it was said, was figured on the basis of unventilated traps.

If the citizens of Grafton, at the coming town meeting, follow the recommendations of the selectmen they will appropriate $32,000 to make three school houses sanitary. The selectmen in preparing their annual estimates have included this amount.

James P. Mahon, a Brookline master plumber, has filed a petition in bankruptcy, scheduling liabilities of $4,593 and assets of $505.

Maine

M. C. Hutchinson, proprietor of a plumbing and heating establishment on Brackett Street, Portland, recently received a letter from Stanley Lynch, a former employe, now with an engineer unit in France. Mr. Lynch was one of the first among the Portland young men to volunteer for service abroad, and his former employer and associates are seeing to it that he has all the extras possible. A large Christmas box was sent him, receipt of which was acknowledged in his letter.

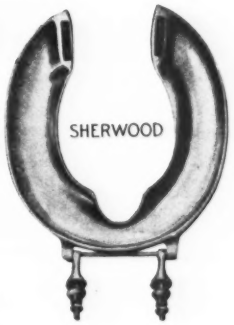
The plumbing establishment of Harry M. Huse, in Music Hall Block, Bath, was visited by fire on Thursday, January 3rd, which did considerable damage. The loss was covered by insurance.

Wisconsin

Frank J. Smith, of Milwaukee, becomes a member of the Committee of Plumbing Examiners of Wisconsin by virtue of an appointment by the Wisconsin State Board of Health on January 3rd. Mr. Smith has been actively engaged in the plumbing business in Milwaukee for the past 30 years, and is especially prominent in affairs of the South side. He will succeed J. E. Robertson, also of Milwaukee, who resigned on October 1st, in order to devote more time to his expanding business. Mr. Robertson has broadened the scope of his business to include general contracting. He has been a member and presi-

Will Last a Lifetime

SHERWOOD
Aluminum
Closet Seats



are break-proof, never wear out or come apart.

Strictly sanitary. Easily kept clean with soap and water.

Explain to your client the advantages of the SHERWOOD and he will want it.

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The Mouat Graduating Vapor System is automatic, and dependably so. The Mouat Regulator is constructed on the principle of a hydrostatic balance and is automatically operated by water. This water is moved from an auxiliary tank to a movable receptacle, and vice versa.

The fact that there are no delicate pieces of mechanism required to operate this system, makes an instant appeal to both the home-builder and the housewife.

Get the facts from our literature, they will interest you.

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MOUAT VAPOR HEAT

Dole PACKLESS GRADUATED RADIATOR VALVE

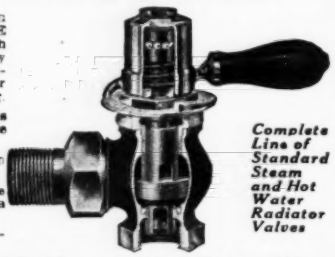
Embodies a new and exclusive DOLE principle by which you can have every degree of opening required in vacuum or vapor steam heating.

This Adjustment is easily made while the steam is on.

Nothing like it on the market.

Furnished with the DOLE without extra cost.

Write for new circulars.



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PAUL Systems give the Best Service

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Private Electric Lighting Systems
Electric and Power Pumps
Compressors and Garage Air Service Systems

For Country Homes, City Residences, Country Clubs, Summer Cottages, Factories and Private and Public Institutions, For the Factory or Private or Public Garage

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MAIN OFFICE AND FACTORY
Dept. 14 Fort Wayne, Indiana.

Government Type Non-Siphoning Trap

Made by

Sanitas Manufacturing Co.
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Prices on Application

UNIFORM HOT WATER HEATING

Write for This Booklet

It tells you all about the

Ball Seal Generator

for Hot Water Heating.

This generator increases circulation and radiation. Prevents sluggish, water-logged conditions. Reduces fuel cost. Operates without noise. No attention needed.

Just what you want for that next job.

The Ball Seal Generator Co.
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dent of the plumbing examiners' board since its organization in 1913. Under authority of a law of 1917, the Wisconsin state board of health has voted to empower the state health officer to act as and for the health board, when that body is not in session, to revoke plumbers' licenses for cause, as provided by law, subject to the right of the licensee to a hearing and presentation of testimony in his own behalf. The state health officer also has been authorized to act for the board in arranging for the conducting of plumbing examinations and in designating the places at which they shall be held, and in appointing such assistants as may be needed to aid in this work.

THE THRIFT CLUB AND OFFICE EFFICIENCY.

Saving and Efficiency Go Hand in Hand.

The Thrift Club, or War Savings Club, is being found a wonderful factor in promoting efficiency in the factories and offices in which it has been organized. The War Savings Committee for Illinois is recommending that it be tried wherever there are fifty or more employes.

Various plans have been adopted in various offices. In some of the railroad offices "Two-Bit" Clubs have been organized, and the members endeavor to set aside twenty-five cents a day for the purchase of a Thrift Stamp. In other places the employes sign up to set aside each week, or each pay day, if pay is not by the week, a stated sum for the purchase of Thrift or War Savings Stamps. These sums range from twenty-five cents a week, for office boys, to considerable amounts for higher salaried employes.

From the standpoint of the employe there can be no question as to the benefit to be derived from the organization of such Thrift Clubs. Thousands of boys and girls, and men and women, who never saved before, will save and save systematically. Before they know it they will have a considerable sum invested in War Savings Stamps, which can never depreciate in value because they are always redeemable at the Postoffice, on ten days notice, at the full amount paid for them, with interest in addition.

And the employe will learn the meaning of interest—the value of having his money work for him. Every dollar he puts in will come back to him, largely increased at the end of the five-year term. Each War Savings Certificate will be like an insurance policy, standing always ready to provide cash in times of adversity, of sickness or unemployment.

From the standpoint of the employer the value of having all employes engaged in a friendly rivalry of thrift, instead of a rivalry of dress or dissipation, can be imagined. All factories know that efficiency is decreased the day after pay day. This may not be from actual dissipation, but from unwonted late hours, due to the fact that the employe has the money in hand for a dance, or a theater party, or any one of the hundred, more or less harmless things that make for inefficiency at work.

The War Savings Committee for Illinois recommends that employers make it as easy as possible for their employes to purchase the Thrift and War Savings Stamps by taking out agencies for the stamps. It is the desire that the stamps be on sale right at the cashier's window, so that the employe may purchase them conveniently at the time when he has his money in his hand.

It has been found by experience that no other method of distributing the stamps has been so efficient. A man's intentions may be of the best, but a thousand things may prevent him carrying them out if he has to make an extra trip to the post office, or some other distant place to carry them out.

COMMENT ON THE EXPLOSION OF A HOT WATER HEATING BOILER.

(Continued from Page 51.)

had an opportunity of learning any further particulars. The explosion is the subject of the day, and I would be pleased to receive the opinion of a writer on subjects of this nature.

My purpose in sending you the enclosed clippings and asking your opinion is not for the purpose of personal information, but I believe it would be an interesting subject to the trade at this time of the year, and therefore call the matter to your attention.

Your interested reader,

Rockford, Ill. M. J.

The above communication refers to an explosion of a hot water heating boiler in the residence of Wm. A. Ogden at Rockford, Ill., which wrecked the house.

The Press clippings, enclosed with the letter, state that it is believed by many persons that the explosion was deliberately planned by the I. W. W. or Pro-German plotters, who placed some powerful explosive in the fuel. These statements made in the newspapers reflect the nervousness of the authorities and others who have endeavored to follow closely the movements of the above organization and the supposedly Pro-German propaganda to create a reign of terror in various parts of the United States.

The facts known may be briefly stated as follows: The Ogden family left their home in Rockford shortly before Christmas to spend the holiday vacation with relatives at Bardolf, Ill. Before leaving home Mr. Ogden drew off the water in the heating apparatus and arranged with a neighbor to refill the system and start a fire in the heater just before the time when they were to return home. The neighbor supposing the apparatus to be ready for filling and firing turned water into the system until the altitude gauge registered 22 ft. (the required height), built a fire and a few minutes later put some coal in the heater and left the premises. He states that in fifteen or twenty minutes he returned, put more coal on the fire and again left the building, going to his stable for a time and later starting down the street. A short time later he was attracted by people running who stated that the Ogden residence was on fire, which proved to be due to the explosion of the hot water heating boiler.

The above particulars cover practically all of the known facts and they are sufficient to show that without any doubt the explosion was due to hot water pressure and not to any kind of an explosive, as has been intimated.

It might here be stated that the city pressure turned into the system would (if the pipes were frozen shut) easily cause the altitude gauge to register a height of 22 ft. of water as one pound of pressure lifts a column of water approximately 2 ft.

Without doubt the system had not been properly drained and the water held in suspension by a vacuum froze up in some of the pipes, shutting off the vent to the expansion tank and through it to the atmosphere, and as a result a tremendous pressure was developed on the system which finally exploded or fractured the boiler.

There is a difference between exploding a boiler or rupturing it. The castings may be split or ruptured by an excessive pressure of cold water without causing damage to life and property. A cast iron steam boiler can be

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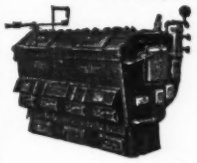

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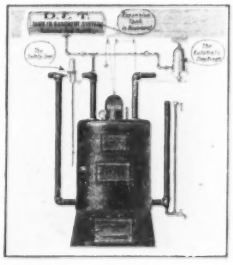

costs less to install than others; permits use of smaller pipes; speeds up circulation; always makes a satisfied customer and gives you a good profit.

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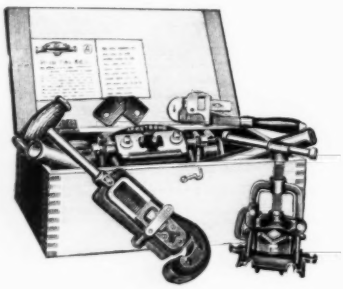

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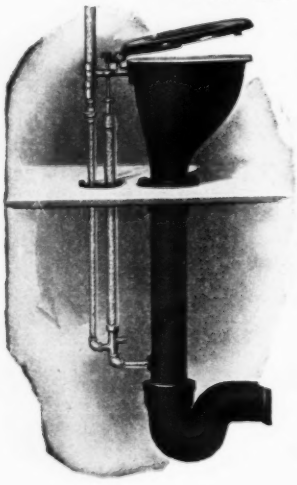
The Main Feature

The PITTSBURGH No. 4

was the first Frost-Proof Closet on the market with a valve accessible and removable above the floor. It still remains the leader in its field.



Valve and parts are made of best Red Brass in heavy pattern—substantial and durable.

Straight Back Enameled Rim Hopper.

No stuffing boxes.

The best frost-proof closet money can buy, at a price that warrants its use on any job.

Furnished with or without soil pipe.

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Penn. Ave. at 32nd St.
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ruptured by steam pressure without causing any very great loss. The sudden liberation of a volume of hot water at a high temperature will do untold damage. Suppose that a pressure of 60 lb. was sufficient to fracture the boiler. The water at this pressure has a temperature of over 300 degrees Fahr. When liberated, this water immediately vaporizes and the stored up energy suddenly loosed exerts a tremendous force.

It is a matter of record determined by research and experiment that one cubic foot of water heated to 307 degrees (the temperature of steam at 60 lb. pressure) will develop, when suddenly liberated from pressure, as much force as 2 lbs. of gunpowder. The force or heat energy of one cubic foot of steam at 60 lb. pressure is about 850 foot-pounds. A cubic foot of water at the same temperature and pressure has a force of about 300,000 foot-pounds, an energy about 350 times that of steam of an equal volume and pressure.

The writer has known of a large number of hot water explosions, many of which he has personally inspected, where the results of the explosion clearly demonstrated the above facts. In a Connecticut city a hot water boiler exploded and ripped out the entire floor, joists and all, of the room immediately above the heater, and pieces of the casting penetrated the ceiling of the room some going through the flooring of the bedroom above. In a Massachusetts city two boilers, heating an apartment house, exploded and partially wrecked the building and started a fire which consumed almost the entire interior of the structure. Two persons were killed by this explosion.

We could cite many others of a similar nature and all *were due to the same cause*, viz: Frozen pipes which prevented the expansion of the water without accumulating a pressure.

The explosion of kitchen ranges, due to frozen water-backs, or pipes connecting the water-back with the range boiler, is a somewhat common occurrence. The volume of water in a case of this kind is so small that the damage resulting is usually not very great except in case of fire.

The explosion in the home of Mr. Ogden leads us to give a word of caution. When a hot water heating apparatus is drained the air cocks or vents to all radiators should be opened and left open to break any vacuum which might hold water in suspension. As the water is lowered below the radiators on each floor the air vents may be opened without danger of the water running out of the radiators. Also, the overflow and vent pipe of the expansion tank of a hot water system should never be installed in such a manner that the water will not drain entirely out of the pipe.

RUSSIA'S ASBESTOS INDUSTRY.

As a producer of the world's supply of asbestos, Russia ranks next to Canada. The total production, however, of the Russian mines, at its highest mark, in 1913, was probably less than one-eighth of the output reached by Canada in that year. As the consumption of asbestos is likely to increase very much after the war, the urgency of development of the asbestos industry is being strongly pressed in conjunction with the general policy of opening up Russia's mineral resources as one of the most necessary steps called for in connection with the economic revival of the country.

The chief centers of the asbestos-mining industry in Russia lie on the eastern slope of the Urals, in the Governments of Perm and Ekaterinburg. The present pro-

duction comes almost exclusively from that region. Rich deposits have been proved and partially worked in Siberia, in the Governments of Irkutsk and Penisei, but access to the localities is difficult at present.

An interesting survey of the position of the Russian asbestos industry appeared in the current issue of the official Foreign Trade Bulletin of the Department of Trade and Commerce, Petrograd, from which the following facts have been taken. The production of asbestos in Russia for the 10-year period, 1905-1914, is given as follows: 1905—8,010 short tons; 1906—10,143 tons; 1907—10,451 tons; 1908—13,130 tons; 1909—16,584 tons; 1910—13,467 tons; 1911—17,423 tons; 1912—18,818 tons; 1913—19,284 tons; 1914—17,297 tons. Practically all the production in 1913 and 1914 came from the Ural mines. The official returns for 1915 and 1916 are not yet available, but the estimated production is given as 10,780 tons and 9,030 tons, respectively.

Russia's 14 asbestos factories are urged to place on the market, instead of the raw material, a greater proportion of finished goods of standard types, thus following the example of Germany, Austria, and Belgium. France is regarded as an especially promising market; it imports annually 7,000 tons of crude asbestos, most of which could be supplied by Russia when the proposed direct steamship connection between France and Russian Baltic ports is established. Another market of promise for Russia is Japan, which previously imported asbestos through German agencies. The consumption of asbestos in Japan is reported to have expanded greatly during the war.

Burlington, Iowa.—The Stewart & Hayden Co., of 310 North Main Street, has recently secured the following contracts: Installing modern plumbing in the Consolidated school building at Columbus Junction, Iowa, and a modern heating ventilating system in the Consolidated school building at Letts, Iowa.

Obituary

George F. Thayer.

George F. Thayer, an old-time plumber, died at his home in Gloucester, Mass, on December 26th, aged 73 years. He had been ill for a long time. Mr. Thayer was born at Randolph, Mass., and was engaged in the plumbing business in that town for a number of years. He moved to Gloucester some years ago.

Charles F. Bond.

Charles F. Bond, an old-time master plumber of Portland, Me., and a resident of that city the greater part of his life, died on Sunday, December 30th, after a brief illness. He was 60 years of age, and while he had not been in the best of health for some months, he had been confined to his bed only a short time. Mr. Bond was the son of the late John Bond, for many years prominent in the plumbing business at Portland, and a member of the firm of J. H. Bond & Co., who conducted business at 180 Fore Street and later at 204 Federal Street. The son entered his father's establishment upon leaving school and learned the plumbing trade. In 1900 at the death of the elder Bond the business was discontinued and since that time Charles F. Bond had been associated with other plumbing concerns in Portland.

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cover every steam heating requirement.

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Will not leak air

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Quality the Best That Can Be Made.
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TEN-DAY FREE TRIAL
We are so sure that the
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will please you that we will send one and let you try it out for ten days. We will take it back if you are not entirely satisfied with it. We know you will be pleased when you find out how much money it will save on every job. Requires no nails, screws or fastenings. Patented Jan. 26, 1915. Write to-day for our offer.
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¶ Page 73 last week contains important information to those interested in cutting threads on pipe.
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ENTENTE PLUMBING CORPORATION TO RUSH WORK ON LIBERTY CONTRACT.

(Continued from Page 53.)

cannot pass the smoke or peppermint test of the liberty system of government plumbing, which was invented by George Washington in 1776 and originally installed in the thirteen apartments of democracy, a modest building at first, but which now numbers forty-eight flats, all in the sun. A French liberty plumber named Lafayette cooperated in the installation of the system which has always given popular satisfaction, particularly since it was remodeled by Abraham Lincoln, who spent over four years at the job.

The concealed piping of the Hohenzollern system has been condemned by inspectors of liberty plumbing, who discovered that it had been secretly installed in some of the American apartments of democracy. It was instantly trapped.

Digging around the foundations of the democracy apartments in Chile, Argentina and Brazil, liberty plumbing inspectors found more concealed Hohenzollern piping, this being of Luxburg pattern. It amazed them, for it extended all the way to the main offices of the firm of Hohenzollern & Co. in Berlin. It was immediately condemned and ordered torn out by Chief Plumbing Inspector Lansing. The autocratic stench was penetrating. It was detected in Stockholm, Sweden, where diplomatic fumigation finally cleared the air.

The Entente Plumbing Corporation intends to stay on the job, until the work of installing the liberty system of government plumbing is completed and the Hohenzollern system is dumped into the junk pile. The liberty system must be adopted. It must and will supersede the system, which Hohenzollern & Co. would ruthlessly thrust upon the liberty apartments of the world, and which has been strongly condemned by democratic sanitarians in every country. "Heraus mit it."

PNEUMATIC WATER SUPPLY SYSTEMS.

(Continued from Page 49.)

the filled position the line will stand at 44 per cent usable water+2.2 per cent retained water=46.2 per cent total water which=.47 D or .47×60=28.2 inches. At 75 pounds gauge there will be 28 per cent usable water in the tank+2.2 per cent retained water=30.2 per cent total water; 30.2 per cent=.34 D or .34×60=20.40 inches.

What then are the true conditions if the water line is at 18 inches for 75-pound gauge?

18-inch W. L.=18/60=.30 D (diameter) or H; if H=.30 then "per cent"=25.2 per cent total water; 25.2 per cent total water—2.2 per cent retained water=23 per cent of usable water.

Twenty-three per cent of water at 75-pound tank pressure shows an initial air pressure of only 55 pounds instead of the 70 pounds required, showing the tank is not sufficiently charged with air.

And the result of this? When the tank pressure drops to 50 pounds, there will still be retained in the tank 7 per cent of usable water, which is really not usable at all, which added to the 5 per cent of retained water=12 per cent instead of the 5 per cent which should be retained. Thus the value of 7 per cent of the storage space for water is lost if the air is allowed to be carried off until the initial air pressure is only 55 pounds gauge.

LEGAL DECISIONS

Retiring Partners and Pre-Existing Debts.

The dissolution of a partnership by the retirement of a member thereof does not alone discharge him from liability for the pre-existing debts of the firm.

Nor do the mere assumption of the indebtedness by the partner continuing the business of the concern after the dissolution, and the creditor's assent thereto, without an express or implied agreement by the creditor to rely exclusively upon the credit of such partner, work a discharge of the retiring partner from the joint obligation.

To exonerate a retiring partner from a firm debt contracted before the dissolution, the facts and circumstances out of which arises an implied release or discharge must be established by clear and convincing proof, certainly where the creditor theretofore expressly refused to agree to such exoneration.

To warrant such exoneration by implication, the facts and circumstances manifesting an intention to effect the result must, to avail, be established by clear, positive, and adequate proof.

An express agreement to release the retiring partner from such indebtedness, to be effectual, must be based upon a valuable consideration.

A promise by a partner already bound by a partnership note to discharge the debt is no consideration for an agreement to release the other partner.

Where there has been a previous refusal of the creditor to exonerate the retiring partner from a firm debt, subsequent declarations of the creditor, when relied on as effecting an exoneration of the retiring partner from the joint liability, are to be interpreted and construed in the light of his previous refusal and of the circumstances under which the declarations were made.—Supreme Court of Appeals of West Virginia in Bays vs. Johnson, 92 Southeastern Reporter, 792.

Lien Parties and Statements.

The Supreme Court of Kansas says that the plaintiff in the case of Brown vs. Walker et al., 164 Pacific Reporter, 1092, sought to foreclose a mechanic's lien. Several other lien claimants were made parties defendant. The liens were sustained and foreclosed, and the owners of the property appealed. The two principal questions in the case were whether or not the person who contracted with the various lien claimants for labor and material was the agent of the owners and whether or not certain of the lien statements furnished sufficient foundations for liens.

The owners leased the property to a party, whom the lease authorized to make two classes of improvements: First, certain special improvements in the basement of the building, involving the installation of toilets, bathtubs, and appendages, which were not to become a part of the building, but were to be the property of the tenant, removable at the end of the lease; second, general changes, improvements, and betterments. These improvements were to be made at the tenant's own expense, but were not removable, and the lease provided:

That, should the property be sold, the tenant would surrender possession "after sixty days' notice in writing and the payment of one-half the amount expended on improvements or betterments in the way of plumbing, plastering, painting, papering and carpenter work, or hardware or other material

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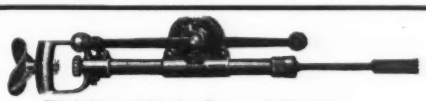

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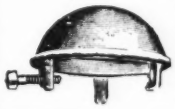

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The standard for 30-40 gal. boilers, and single coil heaters or equivalent. Has ⅜-in. gas openings.
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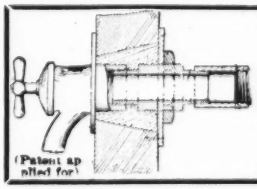

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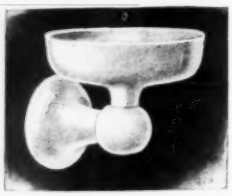

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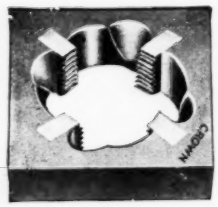

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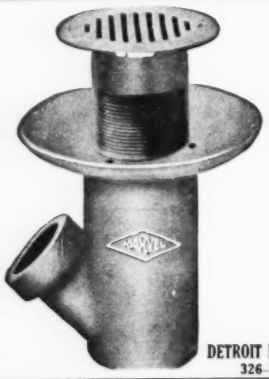

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407 S. Dearborn St. - - - Chicago, Illinois

used in repairing said building other than repairs or betterments to be made in the basement of said building as it now exists, the whole of said expense in this respect to be made by lessee not to exceed $600."

Liens were claimed for labor and material furnished for improvements of the second class only.

The Kansas statute provides that any person who shall, under contract with the owner of land, or with the trustee, agent, husband, or wife of the owner, perform labor or furnish material for the erection, alteration, or repair of any building, structure, or improvement, shall have a lien for the amount due for such labor or material. The supreme court holds that in this instance the tenant was the agent of the owners for the alteration and repair of their building, and was authorized to contract for labor and material for those purposes.

Mechanic's lien statements otherwise sufficient which named the owners, named the lessee as contractors, and named the persons who furnished labor and material for the alteration and repair of the building as claimants were sufficient to furnish the basis for mechanics' liens.

A mechanic's lien statement which named the owners and claimants and recited that the owners employed the lessee to make improvements on the property, and that the lessee, being in possession and control of the property, employed the claimant to furnish labor and material for the purpose, was sufficient to furnish the basis for a mechanic's lien.

A mechanic's lien statement naming the owners, naming the lessee as contractor, and naming the claimant was sufficient, although the statement used expressions indicating that the claimant was a sub-contractor.

At the close of the evidence in an action to enforce the liens, amendments were properly allowed correcting informalities in the lien statements and conforming the pleadings to the amended statements, no changes being made in the names of the owners, the name of the contractor, or the names of the lien claimants.

Judgment of foreclosure affirmed.

Competent Oral Test of Written Obligation.

Although the terms of a written obligation, assumed to be valid, cannot be varied by oral evidence, it may be shown by oral evidence what caused the party thus to obligate himself, and thereby test the question whether he is legally bound, as the writing imports, or whether he is by any cause wholly or partially freed from liability thereon. Furthermore, in a foreclosure suit between the immediate parties to the note and mortgage oral evidence is always admissible to show a failure of consideration, or that the note and mortgage were given merely as accommodation to the payee.—Supreme Court of Kansas in Rice vs. Rice et al., 165 Pacific Reporter, 799.

Condon & Patton, plumbing and heating contractors of Haddon Heights, N. J., issued an attractive calendar bearing the picture of a good-looking girl on horseback waving her hands in greeting. The size of this calendar is 11 by 16 inches.

And Where Was Father?

A young lady with a pet dog on an electric car asked the conductor to stop at a certain point. When he did so, she went to the platform and there stood gesticulating, with the dog on her arm.

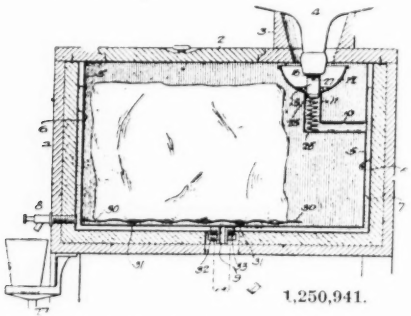
"Hurry up, miss, hurry up! You want to get out here, don't you?"

"Oh, dear, no, thank you! I only wished to show Fido where her mother lives."—"Christian Register."

Patents

Plumbing Department.

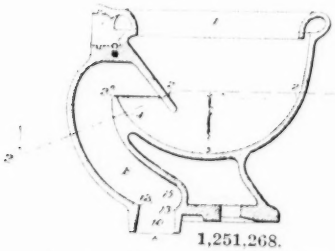
1,250,941. Water-Cooler. Berthold A. Baer, Philadelphia, Pa. The combination, in a water cooling device, of a supporting member, a water receptacle carried thereby, an open conduit in communication with said water receptacle, cooling means for said conduit, a tubular shell



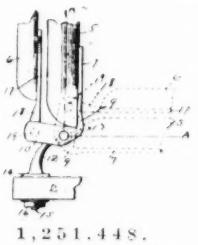
1,250,941.

detachably fitting the discharge outlet of the water receptacle and having a plurality of seats, and a float valve carried by said tubular shell and adapted to engage the respective seats when the water receptacle is in different positions and serving to cut off drainage from the water receptacle when the latter is in communication with the conduit.

1,251,268. Method of Flushing Closet Bowls, Charles H. Muckenhirn, Detroit, Mich., assignor to the Standard Sanitary Mfg Co., Pittsburgh, Pa., a corporation of Pennsylvania. The art of emptying the contents of closet bowls by the employment of the dynamic properties of a cycloid consisting in causing an expelling volume of water to follow the arc of a cycloid downward and toward the bowl discharge and causing flushing water to enter the bowl cavity during the operation.



1,251,268.



1,251,448.

1,251,448. Water Closet Seat and Cover Hinge. Bert O. Tilden, Trenton, N. J., assignor to American Sanitary Works, Trenton, N. J., a corporation of New Jersey. A combined closet seat and cover hinge, comprising a leaf adapted for supporting a closet seat, said leaf having spaced L-shaped arms, a pintle rod passing through said arms substantially on the line of the longitudinal axis of said seat, similar independent leaves supporting a cover, said leaves having arms provided with trunnions which pivot in sockets in said L-shaped arms, the axis of said trunnions being parallel to said pintle rod, and a pair of posts having perforated heads to pivotally receive said pintle rod.

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Have Been Manufacturing

Brass Goods

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We have the experience, the training, the men, and can give you what you want, when you want it.

Write for our catalog, if you haven't got one, and that next order tell your jobber you want

"McRae Good Goods"

For High or Low Tanks you will find the

"Compacto" Automatic Seat Action Tank Valve

unequaled

Arrow No. 1 shows point where tee-shaped member engages lever when seat is occupied.

When seat pressure is released, this falls back, pressing lever downward, which raises valve stem into position, as shown by Arrow No. 2.

Patented Oct. 19, 1915

Simple in Construction

The "Compacto" is made on the same principle as the Georgia Valve.

Include the "Compacto" with a complete closet combination and be assured of satisfactory results.

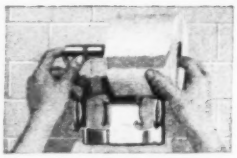
Write for circular giving full description.

Rundle-Spence Mfg. Company

65 Second Street **Milwaukee, Wis.**

Our Canadian customers can procure these valves from the James Robertson Co., Ltd., Toronto, Canada.

THE OPEN ARM PRINCIPLE



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Used by the Government, as well as all good plumbers.

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SOMETHING ENTIRELY NEW IN

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Semi-Finished, Polished aluminum wheel Style N.

Style O—Heavy rough pattern built for service.

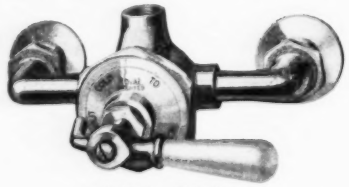
STYLE N **Both shown in catalog D** **STYLE O**

KINSEY & MAHLER CO. ***Peoria, Ill.***

ROYAL

Mixing Valve for Showers

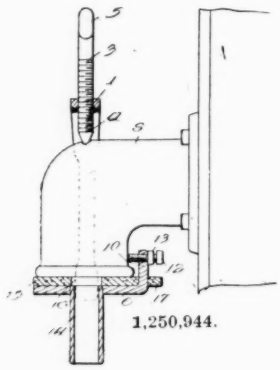
Simple in Operation—Few Working Parts.



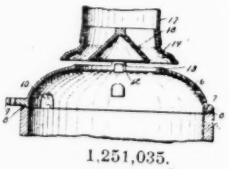
Write for Catalogue.

THE ROYAL BRASS MFG. CO. **CLEVELAND, OHIO**

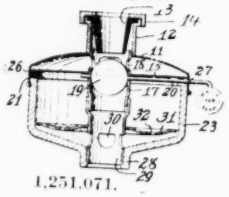
1,250,944. Pump-Spout Attachment. Ernest D. Beckman, Tolna, N. D. A spout attachment including a frame, a plate pivotally engaged with the extremities of said frame, said plate having a discharge opening formed therein and an apertured extension formed upon one side thereof, a clamping screw turned into engagement with the frame at a point opposite to the mounting of the plate, clamping means passing through the apertured extension, other clamping means arranged adjacent the extremities of said frame, and means for normally closing the discharge opening in the plate.



1,250,944.



1,251,035.



1,251,071.

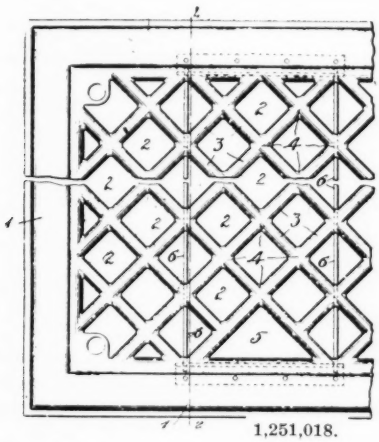
1,251,035. Water Heater. Herbert S. Humphrey, Kalamazoo, Mich. In a water heater, the combination with a boiler and heating burner therefor, of a casing for said boiler and burner, a convex casing top having a central discharge opening and spaced hood rests about said opening, said rests being raised above the edge of said opening and having holes therein, a downwardly flared hood open at its top and bottom, arranged on said rests with its lower edge in a spaced relation to the top and having retaining lugs engaging the holes in said rests, the diameter of the bottom of the hood being greater than the diameter of the opening in the top whereby the hood overhangs the top opening, said hood being adapted to receive a flue, and a conical deflector supported centrally within said hood with its lower edge substantially in the plane end of the deflector approximating the diameter of the top of the hood, said deflector being supported by a cross bar at its upper end integral therewith and with said hood.

1,251,071. Soap Holder. Frank A. McKinney, New Brunswick, N. J., assignor to Walker-McKinney Co., New Brunswick, N. J., a corporation of New Jersey. In a soap holder, a shell, means for attaching same to a faucet, a central pipe in said shell and having lateral openings communicating with the hollow interior of the shell near the top thereof, a butterfly valve in said pipe beneath said lateral openings, detachable means for holding soap beneath said shell and under the spray openings, a discharge tube, and means below said valve for providing communication between said soap containing chamber and said discharge tube.

Heating Department.

1,251,018. Top Plate for Registers and Ventilators Howard S. Hart, New Britain, Conn., assignor to The Hart & Cooley Company, New Britain, Conn., a corporation of Connecticut. A top plate for ventilating purposes, comprising a border, a middle portion comprising interconnected cross bars extending angularly from and connecting adjacent borders and forming diamond-shaped openings whose diagonals extend substantially parallel

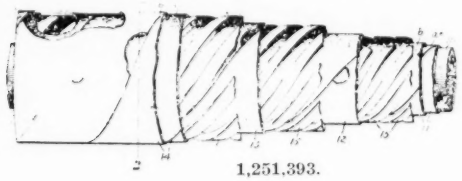
to the borders, a beam member, means secured below the border on opposite sides of said plate for supporting said beam at its ends, said beam having notches on the upper edge to form between said notches, an upward projection



1,251,018.

arranged to project into one of the openings aforesaid to hold the middle portion of said beam against deflection.

1,251,393. Pipe-Covering. Clifford B. Longley, Detroit, Mich. An insulating pipe covering comprising a plurality of tubes each consisting of spirally wound strips of ma-



1,251,393.

terial with the edges of the spirals abutted, and a plurality of parallel, spirally wound spacing strips interposed between said tubes, the spirals of said spacing strips being separated from each other so as to form dead air spaces between said tubes.

Convention Dates

January 15 and 16, 1918.—The annual convention of the Wisconsin Master Plumbers' Association, at Milwaukee, Wis., with headquarters at the Hotel Wisconsin.

January 15, 16 and 17, 1918—The annual canvention of the Iowa State Association of Master Plumbers, at Waterloo, Iowa.

January 22, 23 and 24, 1918.—The twenty-sixth annual convention of the Illinois Master Plumbers' Association, in the Sweeting Building, Bloomington, Ill.

February 5, 6 and 7, 1918.—The annual convention of the Ohio State Association of Master Plumbers, at Dayton, Ohio.

February 7, 8 and 9, 1917.—Fifth National Foreign Trade Convention, at Cincinnati, O., with headquarters at Gibson Hotel.

May 13 and 14, 1918.—The ninth annual convention of the National Pipe and Supplies Association, at Cleveland, O., with headquarters at the Hollenden Hotel.

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This manual and scale offer a new and simple way of computing radiation in a few minutes, based on the actual B. T. U. transmission. This places at your instant command information and data ordinarily available only to the best heating engineers and eliminates all guess work from your estimates.

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Most reliable line on the market.

Opens exactly on 1-4 turn. Positive action.

Valve can't work open and leak. The improved stuffing box does the trick.

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Smith's Jointless Hot Water Attachments

are the ONLY ones that give water circular motion and that have no obstruction to the natural movement of the water.

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are made in 8 sizes—can be used in any furnace.

Easy to install. Highly efficient. Thoroughly tested.

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WANTED — POSITION AS MANAGER for a plumbing and steam supply house, by man with twenty years' experience who knows the business in all its details. Address 2486, care "Domestic Engineering," Chicago. 1-12

For Sale.

FOR SALE — FIFTY 4½" STANDARD altitude gauges at $1.10; fifty straight thermometers at 55 cents, express paid in dozen lots or more. Balk & Hill, 449 McKnight Bldg., Minneapolis, Minn. 1-12

FOR SALE — PLUMBING, HEATING and tinning business in good Minnesota town, only 18 miles from Twin Cities; street car service every half hour. This year's business, $25,000; last year, $33,000. Complete office and shop equipment, invoices about $6,000—will sell for $4,000 cash. Good chance for live man. Best of reasons for selling. Address Fred C. Baldwin, Excelsior, Minn. 1-12

FOR SALE—PLUMBING AND HEATing business in Illinois county seat town of 3,000. Up-to-date water works, sewer system; interurban and two railway lines. Good stock. Leading business of its kind in city—more than two men can handle. Splendid chance for good man. Reason for selling, ill health. Address 2487, care of "Domestic Engineering," Chicago. 1-12; 19

Miscellaneous.

BOOKKEEPING WITHOUT BOOKS. Our new Combination Shop Order, Job, Firm and Price Tickets and Duplicate Billing and Charging Systems cut bookkeeping in half. Samples free. Wesley A. Fink, Haddon Heights, N. J. 1-12

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg Co., 557 W. Lake St., Chicago. tf

WE BUY IRON PIPE COUPLINGS—spot cash. How many, either pounds or pieces have you of various sizes? Gwilliam Supply Co., 615 Christian Street, Philadelphia, Pa. 10-6,tf

DO YOU GET PAID FOR ALL THE time and material used on jobbing work? Our Job Tickets and Material Slips will save you money. Samples free. Wesley A. Fink, Haddon Heights, N. J. 1-12

REPRESENTATION—TO HIGH CLASS manufacturers in the heating and plumbing lines, in the states of Missouri, Kansas, Oklahoma, Nebraska, and adjacent territory, by an experienced engineer and salesman. Commission basis only. Address Sales Engineer A. C., 501 Reliance Bldg., Kansas City, Mo. 1-12

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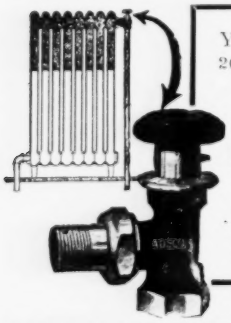
If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on this page will put you in touch with the people you desire to reach.

The cost of insertion is only four cents a word and may mean many dollars to you.



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AMERICAN DISTRICT STEAM COMPANY

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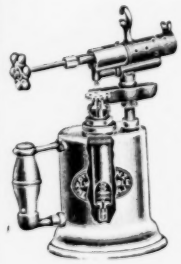
Branches: New York Chicago Seattle

IT'S ONLY TOO TRUE



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No. 66—Pint Torch.

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For the most reliable torches and furnaces, you should use the "ALWAYS RELIABLE." You cannot help but receive perfect satisfaction, inasmuch as each and every article is carefully tested before it leaves the factory. You are fully protected by our guarantee that these goods are manufactured only from the best materials obtainable.

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